LONDON SCHOOL OF HYGIENE
AND
TROPICAL MEDICINE
LIBRARY

UGANDA PROTECTORATE.

ANNUAL

MEDICAL AND SANITARY REPORT

FOR THE

YEAR ENDED 31ST DECEMBER, 1921.

Published by Command of His Excellency the Governor.

ENTEBBE:
PRINTED BY THE GOVERNMENT PRINTER, UGANDA.
1922.

287—235—17-8-1922

6990

WELLCOME INSTITUTE
LIBRARY
Coll. welMOmec
Call No. AnnRep
WA28
.4U4
1926
1921-25

Principal Medical Officer's Office,
Entebbe, Uganda,
25th March, 1922.

Sir,

I have the honour to submit, for the information of His Excellency the Governor and for transmission to the Right Honourable the Secretary of State, the Medical Report on the health and sanitary condition of the Uganda Protectorate for the year 1921, together with the Returns, etc., appended thereto.

I have the honour to be,
Sir,
Your obedient servant,

C. A. WIGGINS,
Principal Medical Officer,
Uganda Protectorate.

The Honourable
The Chief Secretary to the Government,
Entebbe.

LIST OF CONTENTS.

SECTION I.

PAGE.

ADMINISTRATIVE—
(a) Medical Staff ... 5
(b) Financial ... 8

SECTION II.

PUBLIC HEALTH—
(a) Vital Statistics 9
(b) General Remarks 12
Communicable Diseases:—
(1) Mosquito or Insect-borne ... 12
(2) Infectious or Epidemic ... 13
(3) Helminthic ... 15
(c) European Officials ... 15
(d) Asiatic Officials ... 17

SECTION III.

SANITATION—
(a) General Review of Work done:—
(1) Administrative 31
(2) Legislation 31
(a) Factories Board 32
(b) Central Town Planning Board 32
(3) Preventive Measures:—
Mosquito or Insect-borne Diseases 32
Epidemic Diseases 33
(b) Recommendations for future work 37

SECTION IV.

METEOROLOGY 18

SECTION V.

HOSPITALS AND DISPENSARIES:—
Accommodation 18
Table VII.—Return showing total number of cases (with deaths) treated at each station during the year .... 28—31
Buildings 19
REGISTRATION OF MEDICAL PRACTITIONERS AND DENTISTS 21

TABLES.

I. European Medical Staff 22
Asiatic Staff 23
Staff and Hospital Accommodation for each District .... 23—25
II. Financial .... 8— 9
III. Statistics of Population (not included) .... —
(a) (b) (c) and (d) Vital Statistics .... 10—11
IV. Summary of Routine Sanitary work done .... 42—53
V. Meteorological Statement (not included) ... —
Lake Levels ... 18
VI. Return of Diseases and Deaths (In-patients) .... 25—27
VII. Return of Diseases and Deaths (In and Out-patients) .... 28—31

APPENDICES.

I. A Report on Blackwater Fever in Uganda during 1921—by C. A. Wiggins, M.R.C.S., L.R.C.P., F.E.S., Principal Medical Officer .... 54—58
II. A Report on Enteric Fever in Uganda during 1921—by C. A. Wiggins, M.R.C.S., L.R.C.P., F.E.S., Principal Medical Officer .... 58—59
III. A Report on Venereal Disease Measures in Uganda—by Major G. J. Keane, D.S.O. (R.A.M.C., R.) M.D., M.B., CH.B., D.P.H., D.T.M., Specialist Officer, Venereal Diseases .... 59—73
IV. A Report by the Bacteriologist—by Miss M. Martin, M.B., CH.B., D.P.H., D.T M. & H., Assistant Bacteriologist ... 89—90
V. A Report on Sleeping Sickness Administrative Measures in Uganda—by G. D. H. Carpenter, M.B.E., B.A., M.D., B.CH., M.R.C.S., L.R.C.P., F.E.S., F.L.S., F.Z.S., Senior Medical Officer i/c S. S. Measures .... 90—95
VI. The Report of the Dental Surgeon for 1921—by G. S. Bateman, L.D.S.R.C.S. (Eng.) ... 95-96
VII. A Report on Plague in the Bukedi District of Uganda—by S. M. Vassallo, M.D. (Malta) ... 96—99
VIII. A Report on the Mbale District of Uganda—by R. G. Griffin, L.M. & L.R.C.P. & L.R.C.S. (Irel.) D.P.H., (Dub.) ... 99—102

UGANDA PROTECTORATE.

ANNUAL MEDICAL REPORT

FOR THE

YEAR ENDED 31st DECEMBER, 1921.

Section I.

ADMINISTRATIVE.

(A) Staff.

(1) The Establishment for 1921 as Sanctioned in the Estimates was as follows :—

EUROPEAN.

Principal Medical Officer.	1 Office Superintendent.
Deputy Principal Medical Officer.	2 Clerks.
4 Senior Medical Officers.	1 Storekeeper.
15 Medical Officers.	
Principal Sanitation Officer.	1 Clerk.
1 Sanitation Officer.	
3 Medical Officers of Health.	
1 Specialist Officer, Venereal Diseases.	1 European Superintendent.
4 Medical Officers.	
1 Bacteriologist.	2 Laboratory Assistants.
1 Assistant Bacteriologist.	
1 Senior Medical Officer i/c Sleeping Sickness Measures.	2 Sleeping Sickness Inspectors.
1 Entomologist.	
1 Dental Surgeon.	
1 Matron.	
6 Nursing Sisters.	
1 Nursing Sister (Venereal Diseases).	

ASIATIC.

1 Assistant Surgeon.	1 Asiatic Assistant Storekeeper.
2 Senior Sub-Assistant Surgeons.	3 3rd Grade Clerks.
22 Sub-Assistant Surgeons.	3 4th Grade Clerks.
8 Compounders.	

NATIVE.

A varying number of Native Attendants including :—

Hospital and Dispensary Attendants, &c.
Isolation Hospital and Camp Attendants.
Clerks and Interpreters.
Native Vaccinators.
Plague Inspectors.
Sleeping Sickness Inspectors.
Menial Staff.

(2) SHORTAGES ON ESTABLISHMENT :—

At the beginning of the year there were the following shortages on Establishment :—

(*a*) *Europeans.*

8 Medical Officers.
3 Medical Officers of Health.
1 Assistant Bacteriologist.
1 Laboratory Assistant.
2 Nursing Sisters.
1 Nursing Sister, Venereal Diseases.
1 European Superintendent, Do.

(*b*) *Asiatics.*

12 Sub-Assistant Surgeons.
4 Compounders.

Of the 11 vacancies for Medical Officers and Medical Officers of Health, 6 were filled by appointments in England, the Medical Officers arriving in the country on various dates between June and October.

One Medical Officer was engaged locally in January and one in October, and arrangements were made in May for one of the Church Missionary Society's Doctors to do part time work in the Kigezi District.

The Assistant Bacteriologist arrived in October and the Laboratory Assistant in March.

One vacancy for a Nursing Sister was filled by a local appointment in December.

The Nursing Sister, Venereal Diseases, arrived in September, and the European Superintendent in April.

Nine of the vacancies for Sub-Assistant Surgeons and the four vacancies for Compounders were filled during the year, three of the latter during the last four months of the year.

N.B.—The shortages due to absence on leave are not included in the above.

The Establishment of 15 Medical Officers has proved to be inadequate. There are 19 Medical Stations in 15 Districts, so that the establishment does not provide 1 Medical Officer for each station even if no one ever went on leave or fell sick, and at least 3 Medical Officers are now required for Kampala and neighbourhood.

A minimum of 25 Medical Officers for general purposes, 6 for Venereal Diseases purposes, 1 for Sleeping Sickness purposes, and 4 Medical Officers of Health for sanitation purposes (total 36) is required.

In Table B is shown how the staff was distributed in the various districts on the last day of the year.

(3) APPOINTMENTS, CHANGES, ETC., IN STAFF :—

Appointments :—

Captain H. N. Pelly, Temporary Medical Officer	...	7- 5-21
Dr. W. P. Kelly, Do.	...	19- 6-21
Dr. M. Lamont, Do.	...	19- 6-21
Dr. H. G. Cimino, Do.	...	27- 6-21
Captain J. E. Brooks, Temporary Medical Officer, seconded from R.A.M.C.	...	4- 8-21
Dr. J. C. Caldwell, Temporary Medical Officer	...	1- 9-21
Dr. R. G. Griffin, Do.	...	11-11-21
Captain P. H. Rawson, M.C., Do.	...	not yet arrived
Captain C. G. Timms, M.C., Do.	...	not yet arrived
Miss M. Martin, Assistant Bacteriologist	...	1- 9-21

Mr. E. S. Smout, European Superintendent, Venereal Diseases	17- 3-21
Mr. F. G. Caldwell, European Clerk; transferred from Land and Survey Department	22- 8-21
Mr. C. Chorley, M.P.S., Relief Medical Storekeeper, temporary local agreement	1- 4-21
Miss E. M. Stringer, Nursing Sister, Venereal Diseases	4- 8-21
Miss J. Mackertich, R.R.C., Nursing Sister	1-12-21
Mr. R. J. Wilkinson, Plague Inspector, temporary local agreement	13- 6-21
Mr. S. R. Mahindra, Sub-Assistant Surgeon	14- 2-21
Mr. P. K. Sheth, Do.	9- 3-21
Mr. N. Rao, Do.	26- 3-21
Mr. H. M. Thadani, Do.	20- 4-21
Mr. G. S. Jhangiani, Do.	20- 4-21
Mr. Lahna Singh, Sub-Assistant Surgeon, temporary local agreement	1- 4-21
Mr. P. K. K. Menon, Sub-Assistant Surgeon	2- 6-21
Mr. C. P. Thacker, Do.	10- 8-21
Mr. V. V. Chitale, Compounder	26- 3-21
Mr. A. D. Ahmedi, Do.	1- 6-21
Mr. J. C. D'Souza, 4th Grade Clerk, transferred from Secretariat	27- 6-21
Mr. S. X. Martyris, Do.	24- 2-21
Mr. F. H. D'Mello, Do.	13- 5-21
Mr. Sant Singh, Do.	13- 7-21

Promotions :—

Dr. A. H. Owen to be Senior Medical Officer	1- 1-21
Compounder Faquir Chand to be Sub-Assistant Surgeon	1- 4-21
Compounder Karm Dad to be Sub-Assistant Surgeon	1- 4-21
Mr. S. S. Sandhu, 4th Grade Clerk to 3rd Grade Clerk	1- 4-20
Mr. C. Moniz, 4th Grade Clerk to 3rd Grade Clerk	1- 4-20
Mr. D. J. Gunewardene. 4th Grade Clerk to 3rd Grade Clerk	4- 8 -20

Honours :—

Assistant Surgeon Achhru Ram was granted the title of Rai Sahib.

Agreements Terminated :—

Dr. M. Lamont, Temporary Medical Officer.
Mr. C. W. V. Gittins, Sleeping Sickness Inspector.
Mr. H. C. Nayar, Sub-Assistant Surgeon.
Mr. G. S. Jhangiani, Do.
Mr. V. Lokhmal, Compounder.

Retirements :—

Dr. J. H Goodliffe, Medical Officer, on Pension	26- 1-21
Major G. Lane, R.A.M.C., Do. Do.	14- 4-21

Invalidings :—

Mr. M. K. Makijani, Sub-Assistant Surgeon.
Mr. Maqbul Haqq, Do.

Deaths :—

Sub-Assistant Surgeon Basant Singh, Indian Medical Department	14- 8-21

(5) LEAVE :—

The following were on leave during the period stated opposite their names :—

	From.	*To.*
Dr. J. H. Reford, Deputy Principal Medical Officer	4- 4-21	End of year.
Dr. H. L. Duke, O.B.E., Bacteriologist	4- 5-21	End of year.
Dr. J. A. Taylor, Senior Medical Officer	1- 1-21	24- 1-21
Dr. C. H. Marshall, Do.	1- 1-21	18-12-21
Dr. A. H. Owen, Do.	20- 8-21	End of year
Dr. J. M. Collyns, Sanitation Officer	1- 1-21	16- 4-21
Major G. Lane, R.A.M.C., Medical Officer	1- 1-21	14- 4-21 Retired on pension.
Dr. J. H. Goodliffe, Do.	1- 1-21	26- 1-21 Retired on pension.
Dr. J. E. Hailstone, Do.	1- 1-21	12- 2-21
Dr. R. E. McConnell, Do.	1- 1-21	31- 3-21

	From	*To*
Dr. H. R. Neilson, Medical Officer	1- 1-21	14- 6-21
Major R. J. A. Macmillan, D.S.O., Medical Officer	20- 8-21	End of year.
Dr. J. A. Quin, Medical Officer	17-10-21	End of year.
Dr. S. M. Vassallo, Medical Officer	27-12-21	End of year.
Miss E. M. Pratt, A.R.R.C., Matron	1- 1-21	17- 4-21
Miss D. M. Ivers, Nursing Sister	4- 4-21	15-11-21
Mr. H. Flint, Office Superintendent	1- 1-21	11- 3-21
Mr. P. J. L. Waters, Medical Storekeeper	27- 6-21	End of year.
Mr. H. T. Bott, Clerk	7- 5-21	7-12-21
Mr. J. Stewart, Laboratory Assistant	2- 4-21	18-12-21
Mr. C. W. V. Gittins, Sleeping Sickness Inspector	1- 1-21	9- 2-21
Rai Sahib Achhru Ram, Assistant Surgeon	3- 5-21	18-10-21
Mr. A. D. Karkhanis, Senior Sub-Assistant Surgeon	27- 5-21	9-12-21
Mr. Ram Chand, Sub-Assistant Surgeon	1- 1-21	18- 2-21
Mr. Maqbul Haqq, Do.	1- 1-21	18- 2-21
Mr. C. P. Andrews, Do.	25- 2-21	6- 8-21
Mr. Mela Ram, Compounder	6- 2-21	19- 8-21
Mr. F. X. Fernandes, Compounder	18- 4-21	23-10-21
Mr. C. Moniz, Clerk	1- 1-21	3- 4-21

(B) Financial.

ESTIMATED EXPENDITURE FOR THE YEAR.

Medical Division.

PERSONAL EMOLUMENTS :—

	£
Principal Medical Officer, Deputy Principal Medical Officer, Senior Medical Officers, Medical Officers, Dental Surgeon, Medical Storekeeper, Clerical Staff, Packers, Messengers, etc.	27,541
Sleeping Sickness Division.	
Senior Medical Officer, Entomologist and Sub-Staff for the suppression of Sleeping Sickness	3,300
Venereal Diseases Division.	
Specialist Officer and Sub-Staff for the suppression of Venereal Diseases	6,355
Sanitation Division.	
Principal Sanitation Officer, Sanitation Officer, Medical Officers of Health and Subordinate Staff for the suppression of Epidemic Diseases	9,494
Laboratories Division.	
Bacteriologist, Assistant Bacteriologist and Sub-Staff	3,305
TOTAL PERSONAL EMOLUMENTS	£49,995

OTHER CHARGES :—

Medical Division—General	4,475
Sleeping Sickness Division	2,700
Venereal Diseases Division	2,450
Sanitation Division	5,438
Laboratories Division	745
TOTAL OTHER CHARGES	£15,808
TOTAL, MEDICAL DEPARTMENT	£65,803

Hospitals and Dispensaries.

PERSONAL EMOLUMENTS :—

Nursing Staff	2,243
Indian Medical Assistants	8,574
Native Attendants	2,000
Miscellaneous Allowances	15
TOTAL PERSONAL EMOLUMENTS	£12,832

(b) OTHER CHARGES :—	£
Medical, Surgical and Dental Stores	5,500
Upkeep and Equipment of Hospitals	2,350
Miscellaneous Charges	2,357
TOTAL OTHER CHARGES ...	£10,207

SANCTIONED LOAN EXPENDITURE.

(3) PUBLIC HEALTH :—

Medical Department.	
Venereal Diseases purposes	4,400
Entebbe.	
Cold Storage Plant for Laboratory	1,000
Kampala.	
Completion of European Hospital	4,000
Nurses' Quarters	500
Asiatic Hospital, 16-20 beds and out-houses	1,000
Isolation Hospital, Asiatic, 20 beds and out-houses ...	500
Isolation Hospital, Native, 75 beds and out-houses ...	1,000
Swamp	1,000
Disinfector for Kampala and Jinja	1,000
Soroti.	
Native Hospital, 50 beds	1,000
Butiaba.	
Asiatic Hospital, 2 beds	200
Native Hospital, 25 beds	500
Gulu.	
Native Hospital, 25 beds	500
TOTAL ...	£16,600

(5) EDUCATION.

Medical Department.	
Maternity Training School—Grant-in-aid towards building	1,000
Maternity Training School—Equipment	250
Buildings and Equipment—Technical Schools.	
Medical Department	6,000
TOTAL ...	£7,250

SECTION II.

PUBLIC HEALTH.

(A) Vital Statistics.

The Births and Deaths for the five Kingdoms—Buganda, Busoga, Bunyoro, Ankole and Toro, are given in Tables I., II., III., and IV.

Unfortunately, owing entirely to the severe Plague epidemic in Busoga, the deaths outnumber the births again. But for this the tables would have been more satisfactory than ever before.

The introduction of these returns in other districts has not yet been practicable. A census was taken during the year and full returns published.

TABLE I TABLE OF DEATHS FOR THE FIVE DISTRICTS OF BUGANDA, BUSOGA, BUNYORO, ANKOLE AND TORO FOR THE YEAR 1921.

CAUSE OF DEATH.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
COUNTY.	Influenza.	C. S. M.	Fever.	Sleeping Sickness.	Plague.	Small-pox	Measles.	Syphilis.	Gonorrhoea.	Dysentery.	Diarrhoea.	Leprosy.	Cancer.	Tuberculosis.	Muhinyo or Bilimbo (Malta Fever)	Dropsy.	Chest Complaints.	Fits.	Paralysis.	Abscess.	Wounds and Injuries.	Snake-bite.	Child-Birth.	Other Causes.	Total Deaths	Total Births.	Still-Births.
Buganda ...	132	2	3,151	—	414	21	23	1,095	1,066	55	139	98	294	353	234	105	1,531	133	1,200	72	28	46	237	3,332	13,761	13,050	1,169
Busoga ...	—	—	215	3	6,281	38	39	432	142	219	380	62	27	11	187	93	640	41	698	65	9	30	117	1,583	11,312	9,829	487
Bunyoro ...	60	—	70	—	—	—	8	81	96	90	177	29	41	75	61	61	623	28	80	22	19	3	53	922	2,599	1,602	993
Ankole ...	1,052	259	1,696	3	22	–	30	587	22	58	83	31	158	616	199	26	103	24	90	21	19	35	149	923	6,206	7,095	780
Toro ...	96	119	117	13	19	1	7	94	94	50	42	18	57	116	124	172	62	18	9	10	5	13	95	625	1,976	3,872	1,504
TOTAL ...	1,340	380	5,249	19	6,736	60	107	2,289	1,420	472	821	238	577	1,171	805	457	2,959	244	2,077	190	80	127	651	7,385	35,854	35,448	4,933

TABLE II.—NATIVE POPULATIONS—BIRTHS, DEATHS AND RATES PER 1,000 FOR PROVINCES OR DISTRICTS, FOR WHICH RETURNS MADE, AND PERCENTAGE OF STILL-BIRTHS TO TOTAL BIRTHS.

	BUGANDA.		BUSOGA.		BUNYORO		ANKOLE.		TORO.		TOTAL.	
Population	777,852		222,666		98,758		251,289		117,539		1,468,104	
	Births (living)	Deaths	Births (living)	Deaths	Births (living)	Deaths	Births (living)	Deaths	Births (living)	Deaths	Births (living)	Deaths
	13,050	13,761	9,829	11,312	1,602	2,599	7,095	6,206	3,872	1,976	35,448	35,854
Rates per 1,000	16·77	17·68	44·15	50·81	16·21	26·31	28·24	24·70	32·95	16·81	24·14	24·42
Still-Births per cent of Births and Still-Births	1,169=8·22 per cent		487=4·72 per cent		993=3·82 per cent		780=9·90 per cent		1,504=27·97 per cent		4,933=12·21 per cent	

TABLE III.

SHOWING THE NUMBER OF BIRTHS, DEATHS AND STILL-BIRTHS IN THE SAME FIVE DISTRICTS FOR THE LAST SEVEN YEARS.

BIRTHS (Living.)

	BUGANDA.	BUSOGA.	BUNYORO.	ANKOLE.	TORO.
1915	8,319	9,634	3,081	5,577	3,739
1916	9,737	12,093	1,763	5,877	3,509
1917	8,818	11,132	1,680	6,214	3,029
1918	10,287	10,782	1,649	6,615	3,729
1919	9,512	6,918	1,284	5,518	3,731
1920	12,265	9,005	1,597	6,529	3,167
1921	13,050	9,829	1,602	7,095	3,872
TOTALS	71,988	69,393	12,656	43,425	24,776

DEATHS

	BUGANDA.	BUSOGA.	BUNYORO.	ANKOLE.	TORO.
1915	12,231	7,228	3,043	5,434	1,474
1916	12,802	7,771	2,280	5.079	1,645
1917	13,203	8,892	3,126	5,357	1,446
1918	14,160	9,229	4,500	5,839	2,072
1919	15,221	10,053	3,345	7,388	3,907
1920	14,469	6,980	2,609	6,033	2,260
1921	13,761	11,312	2,599	6,206	1,976
TOTALS	95,847	61,465	21,502	41,336	14,780

STILL-BIRTHS.

	BUGANDA.	BUSOGA.	BUNYORO.	ANKOLE.	TORO.
1915	978	480	1,217	711	1,391
1916	968	548	841	787	1,473
1917	971	276	806	763	1,211
1918	1,082	669	893	820	1,510
1919	1,009	319	638	750	1,767
1920	1,127	484	953	773	1,478
1921	1,169	487	993	780	1,504
TOTALS	7,304	3,263	6,341	5,384	10,334

TABLE IV.—SHOWING INCREASE OR DECREASE OF BIRTHS OVER DEATHS DURING THE LAST SEVEN YEARS.

	BUGANDA.	BUSOGA.	BUNYORO.	ANKOLE.	TORO.	Total Increase.	Total Decrease.
1915	—3,912	+2,406	+ 38	+ 143	+2,265	940	—
1916	—3,065	+4,322	− 517	+ 798	+1,864	3,402	—
1917	—4,385	+2,240	−1,466	+ 857	+1,583	—	1,171
1918	—3,873	+1,553	−2,851	+ 776	+1,657	—	2,738
1919	—5,709	—3,135	—2.061	—1,870	— 176	—	12,951
1920	—2,204	+2,025	−1,012	+ 496	+ 907	212	—
1921	— 711	—1,483	— 997	+ 889	+1,896	—	406
TOTAL INCREASE ... DECREASE...	 — 23,859	 7,928 —	 — 8,866	 2,089 —	 9,996 —	12,712	

(B) General Remarks.

The total number of cases treated at Government Hospitals and Dispensaries was 90,466 with 726 deaths, as against 62,405 with 742 deaths in 1920 and 58,137 with 834 deaths in 1919.—The increase is satisfactory as it means that the confidence of the natives is being gained, not that disease is on the increase, and a far greater increase is expected in 1923 when the Branch Dispensary figures will, it is hoped, be included.

N B.—The Venereal Diseases cases treated at Mulago are not included in the above and are not considered in this report. Appendix III. deals with them in full.

Influenza appeared in epidemic form in Ankole, and the Native returns show 1,052 deaths from it.

The Protectorate has fortunately been almost free from Smallpox and Cerebro-Spinal Meningitis.

Plague broke out in Busoga, and one of the severest epidemics we have had raged for some months round Kamuli in Bugabula county. 6,281 deaths were reported in the Native returns for Busoga. This is probably slightly exaggerated. The Principal Sanitation Officer has reported on the epidemic. *See* pages 33, 34.

Odd cases of Plague occurred in or near the townships of Entebbe, Kampala and Jinja more or less throughout the year, as will be seen from the following table.

TABLE V.

		PLAGUE.						CEREBRO-SPINAL MENINGITIS.						SMALLPOX.					
		1916	1917	1918	1919	1920	1921	1916	1917	1918	1919	1920	1921	1916	1917	1918	1919	1920	1921
ENTEBBE	Cases ...	2	36	...	...	...	49	18	14	...	...	...	1	8	16	151	37	...	...
	Deaths ...	1	33	...	...	...	41	7	7	...	...	...	1	4	3	38	9	...	...
KAMPALA	Cases ...	238	122	...	8	72	74	21	141	3	...	3	8	40	331	414	27	...	1
	Deaths ...	216	110	...	3	62	75*	13	106	1	...	3	8	9	67	128	...	...	1
JINJA	Cases ...	62	8	...	15	87	91	18	4	3	8	2	1	24	113	140	1	4	18
	Deaths ...	54	7	...	15	85	73	15	4	3	8	...	1	7	30	47	...	...	7
TOTALS	Cases ...	302	166	...	23	159	214	57	159	6	8	5	10	72	460	705	65	4	19
	Deaths ...	271	150	...	18	147	189	35	117	4	8	3	10	20	100	213	9	...	8

* One death from case remaining 31st December, 1920.

Communicable Diseases.

(1) MOSQUITO OR INSECT BORNE.

Malaria.—8,029 cases with 25 deaths are recorded, 2,424 of them being unclassified. This does not mean that all of these have not been confirmed by microscopic examination. Thus the 863 cases in Entebbe were all verified by the microscope, but unfortunately the variety in each case was not recorded. Instructions have been given for careful records to be kept in future. The greatest increase occurred in Kampala, where 2,474 cases were classified by microscopic examination, as against 1,516 in 1920. The sub-tertian form is far and away the most common, as will be seen in the returns at the end of this Report.

Blackwater Fever.—*See* special report, Appendix I.

Relapsing Fever.—269 cases were admitted with 5 deaths. This does not, I am sure, mean an increase in the disease, as 209 of them were taken into hospital from the labour camps at Entebbe and Kampala from two batches of Banyankole porters who were imported from the endemic area into Buganda for the Public Works Department.

The problem of camps for natives on the main roads is still a difficult one. Trial was made of skeleton shelters, Λ shaped, which were to be thatched daily, as required and the grass burnt next morning and the skeletons moved to another spot. The District Commissioners hoped these would be successful, but they did not catch on, and the natives will not trouble to use them. Camps with cement floors are the only alternative, and the cost of these is prohibitive.

Trypanosomiasis.—133 cases are recorded with 13 deaths, 115 of them being returned from Mbale. This number includes suspects, only 12 of them being confirmed by microscopical examination and admitted as in-patients. These are not all from the Bukedi District, cases and suspected cases being sent to Dr. Vassallo at Mbale from all parts of the Northern and Eastern Provinces.

A further report on the treatment of the cases in Uganda was published during the year by Doctors Marshall and Vassallo, and a further progress report is now in course of preparation. Arrangements have been made for Dr. Marshall to go north early in 1922 to treat the 240 cases marked down by Dr. Carpenter during his tour of inspection. *See* Appendix V.

The revision of the Sleeping Sickness Rules has been under discussion for some months, and it was hoped that the new ones would be published on December 31st, but the difficulty of framing suitable ones that will meet all emergencies and be approved by all parties has been enormous. They should be ready early in 1922.

In addition to the 13 deaths mentioned above, 19 were reported by native chiefs from the five Kingdoms. *See* Table I.

Pyrexia of uncertain origin.—4,282 cases are entered under this head. It is hoped that this number will decrease considerably in the near future when it becomes possible to have a blood slide of every patient with a temperature the cause of which is uncertain examined as a routine at every station.

2. INFECTIOUS OR EPIDEMIC DISEASES.

Anthrax.—One case occurred at Kampala.

Beri-Beri.—15 cases with 6 deaths were reported, 9 of them from Soroti (in view of recent reports from the District Medical Officer, Soroti, cases are probably Cerebro-Spinal Meningitis), 5 from Mbale, and 1 from Lira.

Cerebro-Spinal Meningitis.—36 cases with 30 deaths are recorded in the hospital returns, as against 69 cases with 31 deaths in 1920.

The native returns from the five Kingdoms show 380 cases : 259 from Ankole, 119 from Toro, and 2 from Buganda, but there is little doubt that the majority of these were influenza.

Dysentery.—609 cases with 30 deaths were treated during the year. The returns do not differentiate between amoebic and bacillary dysentery. 3 cases of liver abscess are recorded.

Enteric Fever.—*See* special report, Appendix II.

Erysipelas.—Only 7 cases were recorded, with no deaths.

Gonorrhœa.—1,686 cases (with 6 deaths) were treated, an increase of 203 over 1920. The native returns show 1,420 deaths due to this disease (1,066 of them in Buganda Kingdom) due to the various sequelæ of gonorrhœa, *e.g.*, stricture, with consequent extravasation of urine, etc.

N.B.—The Mulago cases are not included here.

Influenza.—799 cases with 9 deaths were treated, a slight increase over 1920. Ankole was the only district where it appeared in severe epidemic form, 1,052 deaths being reported in the native returns.

Leprosy.—29 cases are recorded in the hospital returns; 19 nodular and 10 anaesthetic.

That leprosy is widely spread throughout the Protectorate has long been known but no legislation or compulsion as to segregation has yet been made owing to our having been unable hitherto to attempt treatment with any hope of success.

Busiro in the Entebbe district has a Native Leper Camp at Vugamira which has been in use for 10 years but no medicinal treatment has been attempted, only blankets, simple dressings for open sores, and soap being provided. There are 25 inmates.

During the last two or three years, the chiefs in Bunyoro have attempted to segregate the lepers, and a good deal of work has been done in this direction during 1921 with a very little monetary help from the Government. Six camps are now completed or in course of erection, and 217 lepers are now housed in them. Here again no medicinal treatment has been possible hitherto.

The chiefs in Lango are anxious for their lepers and those suffering from Yaws, to be treated, and they voted £600 from their own funds for a supply of Salvarsan or its substitute to be obtained from England. This is now in the country, and 3 district dispensaries are now in course of erection in Lango. Treatment at these centres has lately been started by the District Medical Officer in charge.

Unfortunately, our vote for drugs has not been sufficient for the purchase of such drugs as Salvarsan, the gynocardates, etc.; it has only allowed for the supply of the ordinary drugs and dressings in every-day use.

Measles.—72 cases were recorded.

Plague.—339 cases were treated in the different Isolation Camps, with 257 deaths, but this figure includes many "brought in dead." In 1920 there were 420 cases with 368 deaths. The intravenous administration of iodine most certainly reduces the death rate very considerably, especially if started early. Dr. Vassallo ascribes his low death-rate at Mbale to this cause.

The cases occurred as follows :—

	Cases.	*Deaths.*		*Cases.*	*Deaths.*
Entebbe	49	41	Masaka	43	40
Jinja	91	73	Lira	21	12
Kampala	74	75*	Mbale	59	16
Namasagali	2	—			

* This includes one admitted at end of December, 1920, who died early in January, 1921.

The native returns from the five Kingdoms show 6,736 deaths during the year, and for the whole Protectorate 7,388. But the weekly wires which are sent regularly to the Secretary of State in a weekly despatch show 5,871 deaths for the whole Protectorate, and this figure may, in my opinion, be accepted as approximately correct. Nearly 5,000 of these took place in the severe Busoga epidemic. *See* pages 33, 34

The total deaths for the previous five years are : in 1916, 4,384; 1917, 4,031; 1918, 2,493; 1919, 1,022; 1920, 1,732.

Pneumonia.—There is a considerable increase in the number of cases treated during 1921. The figures for the last three years are :—

Year.		*Cases.*		*Deaths.*
1919	...	169	...	66
1920	...	192	...	46
1921	...	243	...	70

Smallpox.—A very satisfactory reduction in the number of cases is shown, the number of cases treated being as follows :—

Year.		*Cases.*		*Deaths.*		*No. of Deaths in Native Returns.*
1918	...	1,374	...	392	...	8,270
1919	...	151	...	40	...	1,840
1920	...	41	...	7	...	578
1921	...	36	...	9	...	60

The decrease in the number of cases is undoubtedly due largely to the establishment of our own lymph manufactory. The Assistant Bacteriologist alludes, in her report (Appendix IV.) to the great difficulty of obtaining an adequate supply of suitable calves, but this difficulty should disappear in 1922 when the stock farm on the Islands is established. The cold storage plant for the Laboratory has been purchased but has not yet arrived in Uganda.

Syphilis.—The number of cases treated at Government Hospitals and Dispensaries, other than Mulago, during the last four years is as follows :—

Year.		*Cases.*		*Deaths.*
1918	...	2,991	...	6
1919	...	2,497	...	8
1920	...	3,860	...	11
1921	...	4,798	...	16

The great increase in attendance is undoubtedly due to the real effort made by the chiefs to lessen the ravages of this disease. The treatment as carried out at the ordinary out-patient department is undoubtedly inadequate in a vast majority of cases, as is the case even at Mulago. *Vide* Major Keane's report, Appendix III.

The native returns for the five Kingdoms show a slight increase in the number of deaths from this cause, but about 2,000 annually have been reported since the returns were started.

Tuberculosis.—14 cases with 1 death were recorded.

Typhus —No cases were reported.

Yaws.—1,284 cases are shown in the Hospital returns with 4 deaths, a large increase over 1920, 502 with 1 death; and 1919, 190 with 1 death.

An attempt is now being made to treat these cases on a large scale. The Lango chiefs last year voted £600 for salvarsan substitutes for this purpose. and the Bukedi chiefs £100, and the drugs are now in Uganda. The Branch Dispensaries in these districts will enable the treatment to be carried out without very long journeys being made by the patients. Yaws is very widely spread over the Protectorate, especially amongst the Nilotics in the Eastern and Northern Provinces.

Helminthic Diseases.—The figures for the last three years are :—

Year.		*Cestoda.*		*Nematoda.*
1919	...	49	...	170
1920	...	42	...	115 with 1 death.
1921	...	81	...	349 ,, 1 ,,

Malignant Disease.—Two interesting cases were reported by Dr. McConnell from the West Nile District. The following extract is quoted :—

> "In a case of Bilharzia disease reported in July's returns and in which death subsequently occurred, the liver was very large, nodulated and suspicious of cancer. A piece of it was sent to Major Archibald, Khartoum, for favour of a pathological report. This has just been received, and an extract reads as follows :—' Sections from a nodule in the liver show a typical *adeno carcinoma;* the greater part of the growth consists of *acini* lined by carcinomatous cells with little liver tissue to be seen.' "
>
> This may have been caused by liver irritation consequent on an infection of Schistosomum Mansoni of long standing. It is reported on account of the interest attached to cancer among African negroes.
>
> 2. A case reported in the notes attached to his November returns was tentatively referred to as exuberant fungoid granulation tissue, and in the return of diseases itself as a wound. It was strongly suggestive of sarcoma and Major Archibald has reported it to be "a myeloid sarcoma in which spindle celled sarcomatous cells and myeloplaques were evident. The growth was vascular and inter-cellular tissue was scanty."

(C) European Officials.

The number of cases of sickness from all causes, the number of deaths and the number of illnesses for which officials were placed off duty during the last four years are as follows :—

Year.		*Cases.*		*Deaths.*		*No. of illnesses for which placed off duty.*
1918	...	380	...	1	...	319
1919	...	516	...	2	...	479
1920	...	473	...	2	...	432
1921	...	745	...	1	...	701

The increase is due mainly to the fact that more Stations have had Medical Officers resident, and so more cases have been entered in the Registers and on the Medical History Sheets.

The death was due to Blackwater Fever (a Veterinary Stock Inspector), who was always on tour in outlying districts.

TABLE SHEWING THE SICK, INVALIDING AND DEATH RATES OF EUROPEAN OFFICIALS DURING 1920 AND 1921.

	1920	1921
Total number of officials resident	350	390
Average number resident	280	244
Total number on sick list	432	701
Total number of days on sick list	2,343	2.493
Average daily number on sick list	6·42	6·83
% of sick to average number resident	2·3	2·79
Average number of days on sick list for each patient	5·42	3·55
Average sick time to each resident	8·36	10·21
Total number invalided	11	4
% of invalidings to total residents	3·14	1·03
Total deaths	2	1
% of deaths to total residents	·57	·26
% of deaths to average number resident	·71	·41
Number of cases of sickness contracted away from Station	32	94

The principal causes of sickness were :—

Malaria	241	Digestive Diseases	150
Influenza	26	Respiratory Diseases	38
Dysentery	5	Pyrexia of uncertain origin	22
Blackwater Fever	2	Paratyphoid	1

Invalidings.—The 4 shown as invalided in the above table include 1 who was permanently invalided for Alcoholic Neuritis and 3 who were recommended short leave and further treatment at home and re-examination before return to Uganda, 1 for nasal obstruction, 1 for mental excitability due to alcoholism, and 1 for cerebral malaria.

Medical Boards were held on 6 other officials, making a total of 10 Boards. Of these 6 officials,

3 were returned to duty.
1 was transferred to Kenya Colony.
1 was recommended transfer to a healthier climate; and
1 was given one month's sick leave in Kenya Colony.

TABLE SHOWING THE CAUSES OF INVALIDING AMONGST EUROPEAN OFFICIALS DURING THE PAST SIX YEARS.

DISEASES.	1921.	1920.	1919.	1918.	1917.	1916.	TOTALS.
Blackwater Fever	—	1	1	1	1	1	5
Circulatory Affections	—	—	—	1	—	1	2
General Debility	—	1	4	1	1	1	8
Nervous and Mental Diseases	—	—	1	1	1	—	3
Neurasthenia	—	5	—	2	1	1	9
Tuberculosis	—	1	—	1	1	—	3
Digestive Disorders	—	—	—	1	—	—	1
Carcinoma	—	—	—	2	1	—	3
Alcoholic Neuritis	1	—	—	—	1	—	2
Neuritis	—	—	—	—	1	—	1
Amoebic Dysentery	—	—	1	2	—	—	3
Adenitis	—	—	—	1	—	—	1
Anæmia and Chronic Bronchitis ..	—	—	1	—	—	—	1
Cardiac Debility	—	—	1	—	—	—	1
Eczema	—	—	1	—	—	—	1
Malaria	—	1	2	—	—	—	3
Rheumatism	—	1	—	—	—	—	1
Villous papilloma of Bladder	—	1	—	—	—	—	1
TOTALS ...	1	11	12	13	8	4	49

European Non-Officials.

The total number of cases treated at Government Hospitals and Dispensaries during the year was 676, nearly double the number, 383, for 1920.

The principal causes of sickness were :—

Malaria	175	Diseases of the Digestive System ..	136
Blackwater Fever	7	Diseases of the respiratory system	57
Influenza	11	Diseases of the skin	20
Pyrexia of uncertain origin	14	Injuries	48
Debility	26		

Deaths.—14 deaths were reported during the year, the causes being as follows :—

Blackwater Fever	3	Pneumonia	1
Cerebral Malaria	1	Endocarditis	1
Smallpox	1	Cerebral Hæmorrhage	1
Heart failure	2	Killed by buffalo	1
Cancer	1	General Anæmia	1
		Puerperal Septicæmia	1

The Census taken during the year showed that there were 924 European Non-Officials in the Protectorate: 553 males and 371 females.

(D) Asiatic Officials.

The total number of cases treated during the year was 1,636, with 1 death, while in 1920 1,136 were treated, with 2 deaths. The cause of the increase is the same as that given for European Officials.

The death was due to Pneumonia.

The principal causes of sickness were :—

Malaria	826	Diseases of the digestive system	255
Blackwater Fever	4	Diseases of the respiratory system	106
Pneumonia	4	Pyrexia of uncertain origin	44

Invalidings.—Ten Medical Boards were held, and 7 officials were permanently invalided. The causes of the invalidings were as follows :—

Neurasthenia	1
General Debility	4
Iritis	1
Asthma	1

The following table shows the Sick, Invaliding and Death Rates of Asiatic Officials during 1920 and 1921 :—

	1920	1921
Total number of officials resident	300	350
Average number resident	250	278
Total number on sick list	1,136	1,565
Total number of days on sick list	3,776	4,839
Average daily number on sick list	10·31	13·26
% of sick to average number resident	4·12	4·77
Average number of days on sick list for each patient	3·32	3·08
Average sick time to each resident	15·1	17·40
Total number invalided	5	7
% of invalidings to total residents	1·66	2·00
Total deaths	2	1
% of deaths to total residents	·66	·28
% of deaths to average number resident	·8	·36
Number of cases of sickness contracted away from station	28	36

Housing of Officials.

This is distinctly improving. The latest type of house now being built for Government Officials is good, but the first-class house is unnecessarily expensive.

Sufficient attention is not paid to minor repairs, especially to the older houses and in out-stations. The guttering and tanks become traps for mosquitoes, and the mosquito netting becomes dilapidated and is often neglected for weeks or months, so that, as the District Medical Officer, Mbale, writes in his report, a false sense of security is given.

In view of the great loss in efficiency caused by malaria amongst European and Asiatic Officials, far stricter attention should be paid to minor repairs by the Public Works Department.

There has been a great shortage of houses for European and Asiatic Officials, especially in Kampala, and this is unfortunate, as the hotels and lodging-houses are, as a rule, very poorly provided with mosquito nets, and it is not uncommon for a newly-arrived official to get an attack of malaria during his first fortnight in the country.

SECTION IV.

METEOROLOGY.

All available information under this head is embodied in the Blue Book.

The Lake level records at Entebbe for the year are as follows :—

	Highest.	*Lowest.*
January	10.37	10.30
February	10.32	10.28
March	10.36	10.39
April	10.36	10.33
May	10.37	10.34
June	10.38	10.33
July	10.34	10.25
August	10.26	10.20
September	10.22	10.15
October	10.15	10.07
November	10.09	10.02
December	10.00	9.95

Note.—The zero of the gauge is 3,686.53 feet above the mean sea level.

SECTION V.

HOSPITALS AND DISPENSARIES.

Accommodation.—The Hospital accommodation in the Protectorate has increased very slightly during the year. The Central Block of the European Hospital, Kampala, was opened on December 1st, but even then the block was not really finished, as the water pump had not been installed, and the baths and lavatory basins were not connected up. Twelve beds were put in, and it is evident already that the wings will be needed as soon as possible. Good progress is being made with the Sisters' quarters, and these should be ready by April or May, 1922. Meanwhile, the Sisters are quartered in a house purchased at the end of the year from a private firm. This will eventually be the Medical Officer's house, as it is so close to the Hospital, and while most convenient for the Medical Officer, would be most inconvenient if inhabited by anyone else. The house is not as good as the ordinary type of house supplied by the Government, though the full price of £2,500 had to be paid, and various additions, especially a verandah and a store, will be necessary.

Additions.—The only other additions to our Medical buildings are :—

(1) those at Mulago. *See* Appendix III.
(2) a temporary mud and wattle ward at Lira.
(3) a temporary mud and wattle ward at Mbale built by the chiefs themselves.
(4) a temporary Dispensary at Fort Portal (incomplete).
(5) part of a permanent ward at Soroti (incomplete).

Branch Dispensaries.—These are now being built in several districts, and one or two were opened towards the end of the year. It is too early to report on them now, but 1922 should show us whether they will accomplish all that is hoped of them. If they are going to be a success it is absolutely essential that the vote for Medical and Surgical stores be very considerably increased, and also the vote for Native Attendants.

N.B.—The Dispensaries in Buganda Kingdom have been started as Anti-Venereal Disease centres, and are mentioned in Major Keane's report, Appendix III.

Medical School.—It is very disappointing to record again that not a brick has as yet been laid of the new buildings. The School will form a part of the "Uganda Technical College." The Superintendent of this College has been appointed, and is now in the country ready to start on the buildings.

The Church Missionary Society re-opened the Mengo Medical School on January 1st, and 16 boys are being trained there; it is, however, probable that this will have to be again closed before our Government Medical School is ready to take over the students.

Maternity Training School.—The large new buildings were opened by Lady Coryndon in June, and the patients and pupils moved in soon after. The school is now in full swing under the supervision of Dr. and Mrs. Albert Cook. The

Nsambya, Roman Catholic, Mission also has some girls in training in their maternity wards under Dr. (Miss) Connolly.

Maternity Centres.—The four centres started in 1920 at Mukono and Kako, in Buganda, at Kamuli in Busoga, and at Mbarara in Ankole, have been open throughout the year under Government control, while four other midwives who are still under the control of the Maternity Training School, have been sent out into the field. The results have varied, but the prospects are distinctly encouraging. A Midwives Ordinance, with rules and regulations, has been framed, and will, it is hoped, be passed early in 1922.

The Anti-Venereal Diseases Campaign was definitely re-opened, and Major Keane has reported in full (*see* Appendix III.).

Dr. and Mrs. Albert Cook assisted the Government very materially by a prolonged tour through the greater part of the Protectorate, lecturing and distributing a pamphlet written for the purpose by Dr. Cook, Major Keane and myself.

Lunatic Asylum.—The building of this has again been postponed owing to lack of funds, though the need for one becomes more pressing each year.

BUILDINGS.

STATEMENT OF WORK CARRIED OUT DURING 1921.

	Fls.	*cts.*
Entebbe.—		
European Hospital:		
Erection of 2 concrete tanks	307	00
Building of X-Ray room	707	23
Kitchen and cookhouse	723	60
Minor repairs	67	39
Civil Hospital and Wards—Repairs	273	30
Segregation Camp—Erection of 2 barbed wire enclosures with 2 huts, galvanised iron	749	87
Isolation Hospital—Building of boys' quarters and kitchen	1,314	06
Kampala.—		
European Hospital—Centre Block	60,199	20
European Hospital—Furniture and Equipment	11,505	16
Completion of buildings at Mulago	50,879	11
Additional Wards at Mulago	9,979	87
Nurses' quarters	42,475	18
Minor repairs to Civil Hospital	99	46
Jinja.—		
European Hospital:		
Rainwater tank	172	83
Erection of two huts for boys' quarters	148	48
General repairs	1,294	66
Native Hospital—Making approach road to Isolation Camp	299	75
Lira.—		
Native Hospital—Additional Ward	208	80
Mbale.—		
Hospital:		
Erection of huts for Native Medical Staff	299	00
Furniture	28	89
General repairs	15	35
Fort Portal.—		
Temporary Dispensary	307	58
TOTAL	*Fls.* 182,055	77

LOAN EXPENDITURE.

STATEMENT OF WORK CARRIED OUT DURING 1921.

	£
(3) PUBLIC HEALTH:	
Mulago.—	
Completion of Venereal Disease Buildings, additional Ward and Operating Theatre	6,086
Entebbe.—	
Isolation Hospital (native)	132
Kampala.—	
Completion of European Hospital	5,008
Nurses' Quarters	749
Isolation Hospital (native)	129
Swamp	921
Soroti.—	
Native Hospital, 50 beds	714
TOTAL	£13,739
(5) EDUCATION:	
Building and Equipment, Technical Schools	535

TABLE A.

The following table shows, by stations, the total number of cases treated, with deaths, at Government Hospitals and Dispensaries, during the years 1921, 1920, and 1919 :—

Station.	1921.		1920.		1919.	
	Total Cases.	Total Deaths.	Total Cases.	Total Deaths.	Total Cases.	Total Deaths.
Arua	3,689	15	4,081	8	1,240	12
Bombo—Civil	6,895	18	2,201	16	845	2
Military			1,326	2	...	...
Butiaba	2,020	10	857	...	1,850	3
Entebbe—European Hospital	198	...	111	1	182	1
Civil Hospital	5,823	81	4,524	18	5,082	24
Fort Portal	5,793	2	...	...	...	...
Gulu	4,204	20	3,423	26	3,422	13
Hoima	2,619	9	1.165	2	...	...
Jinja—European Hospital	224	4	24	1	156	...
Civil Hospital	5,400	127	4,978	152	5,901	135
Kabale	1,075	3	...	...	...	...
Kampala—Civil Hospital	15,061	145	11,072	330	11,801	59
—Gaol and Police	3.671	7	2,679	8	...	...
Kitgum	4,002	3	...	...	1,930	34
Lira	3,118	86	2,812	23	1,918	64
Masaka	5,046	28	5,608	19	3,782	26
Masindi	4,701	33	5,287	21	5,560	17
Mbale	4,489	81	3,882	71	3 865	342
Mbarara	4,327	19	4,533	12	6,259	32
Mubendi	4,024	7	...	...	...	...
Namasagali	1,884	3	1 486	2	1,540	14
Soroti	2,203	25	2,356	30	2,804	56
TOTALS ...	90,466	726	62,405	742	58,137	834

N.B.—In addition to the above the following new cases were treated at Mulago Venereal Hospital:—

Syphilis I and II	929
Syphilis III and Latent Sy.	520
Congenital Syphilis	214
Gonorrhœa	677
Other Venereal Diseases	126
Ante-natal	106
Non Venereal Diseases	846
Examinations for Venereal Diseases	2.830
TOTAL ...	6,248

LEGISLATION.

Executive and Legislative Councils were appointed for the Protectorate at the beginning of the year, and the Principal Medical Officer was appointed an *ex-officio* member of both Councils.

The following Ordinances were passed :—

1. The Lunacy Ordinance. No. 19 of 1921.
2. The Medical Registration (Amendment) Ordinance. No. 23 of 1921.
3. The Infectious Diseases (Amendment) Ordinance. No. 25 of 1921.
4. The Venereal Diseases Ordinance. No. 32 of 1921.

(1) This was passed to replace the English Act hitherto in force.

(2) This allows the Principal Medical Officer to license any Assistant or Sub-Assistant Surgeon who has done good work in the Government service and who has retired therefrom. Formerly, only those actually in the service of the Government could be licensed.

(3) This allows the Medical Officer to take immediate action in any place where an epidemic breaks out and the Administrative Officer is absent or inaccessible.

(4) This is founded on the English Act, and prevents the treatment of Venereal Diseases for gain otherwise than by registered or licensed people.

Various rules dealing with Sleeping Sickness were also published *See* also page 31 of Principal Sanitation Officer's Report for the new townships gazetted during the year and for the places declared infected places during the year.

Conference.

There was no conference of the Principal Medical Officers of the East African Colonies and Protectorates during the year.

Registration of Medical Practitioners and Dentists.

The Ordinance governing Registration came into force on July 1st, 1913, since when and up to December 31st, 1921, the following have been placed on the Register :—

Registered Medical Practitioners	62
Dentists	1
Licensed Medical Practitioners	44

The numbers actually on the Register on December 31st, 1921, were as follows :—

Registered Medical Practitioners	42
Dentists	1
Licensed Medical Practitioners	20

Of the above 42 Registered Medical Practitioners, 9 belong to the Church Missionary Society and 1 to the Mill Hill Mission; the remainder are in Government service.

The Board appointed for the purpose of the Ordinance consists of :—

Major C. A. Wiggins, *President and Registrar.*
Dr. C. J. Baker.
Dr. A. R. Cook.
Dr. J. Hope Reford.

Scientific Papers Published during 1921 by Members of the Medical Staff.

Drs. C. H. Marshall *and* S. M. Vassallo—

" Further Report on the Treatment of Sleeping Sickness."
—Published in *British Medical Journal.*

Dr. C. H. Marshall—

" A New Method of Treatment of Trypanosomiasis."
—Published in *Trans. Roy. Soc. Trop. Med. and Hyg.*

" A Paper on a New Method of Treatment of Human Trypanosomiasis."
—Published in *Journal Tropical Medicine and Hygiene.*

Dr. J. W. H. Eyre *and* Dr. C. H. Marshall—

" A Case of Trypanosomiasis treated by Intrathecal Serum."
—Published in *British Medical Journal.*

Dr. H. L. Duke, O.B.E.—

" On the Non-lactose-fermenting bacilli in the stools of healthy and unhealthy Uganda Natives."
—Published in *The Lancet.*

" On the Zoological status of the Polymorphic Mammalian Trypanosomes of Africa and their relation to Man."
—Published in *Parasitology.*

Drs. W. L. Peacock *and* H. L. Duke—

" A Case of Human Anthrax in Buganda Kingdom."
—Published in *The Lancet.*

Dr. J. Hope Reford—

" Report on Enquiry into the Durban System of Control of Native Beer."

Dr. G. D. H. Carpenter, M.B.E.—

" Experiments with a monkey on the Relative Edibility of Insects."
—Published in the *Transactions of the Entomological Society of London.*

C. A. WIGGINS,
Principal Medical Officer, U.P.

Table B.—Return showing the Medical Staff and the Principal Members of the Subordinate Staff.

Name and Qualifications.	Rank of Appointment.	Where stationed on 31st December, 1921.	REMARKS.
Hon'ble Major C. A. Wiggins, M.R.C.S., L.R.C.P., F.E.S.	Principal Medical Officer	Entebbe	
J. H. Reford, B.A., M.D., B.CH., B.A.O., L.M. (Dub.), D.T.M. (Liverp.)	Deputy P. M. O.	On leave	
R. A. L. van Someren, M.D., CH.B., D.P.H. (Edin.) M.B.O.V.	Senior Medical Officer	Jinja	Also Acting M.O.H. Jinja.
C. H. Marshall. M.R.C.S., L.R.C.P., M.B., B.S. (Lond.)	Do	Entebbe	
G. D. H. Carpenter, M.B.E., B.A., M.D., B.CH. (Oxf.), M.R.C.S., L.R.C.P., F.E.S., F.L.S., F.Z.S.	Do	Entebbe	In charge S.S. Measures.
J. A. Taylor, M.B.. CH.B. (Edin.), L.M. (Dub.), D.T.M. (Liverp.)	Do	Kampala	
A. H. Owen, M.R.C.S., L.R.C.P., D.T.M. & H. (Camb.), B.A. (Camb.)	Do	On leave	
J. E. Hailstone, M.A. (Camb.), M.R.C.S., L.R.C.P., D.T.M. (Lond.)	Medical Officer	Masaka	
R. E. McConnell, B.A., M.D., C.M. (Montreal), D.T.M. (Liverp.)	Do	Arua	
H. R. Neilson, M.B., CH.B., D.P.H. (Aberdeen)	Do	Kampala	Ag. S. O. and M.O.H. Kampala.
Major R. J. A. Macmillan, D.S.O., M.B., CH.B., (Edin.), D.T.M. (Liverp.)	Do	On leave	
W. L. Webb, M.R.C.S., L.R.C.P., M.B., B.S. (Lond.), D.P.H., R.C.P.S.	Do	Kampala	
R. S. Taylor, M.A., M.D., B.C. (Camb.), M.R.C.S., L.R.C.P.	Do	Soroti	
W. L. Peacock, M.B., CH.B. (Glas.)	Do	Mubendi	
S. M. Vassallo, M.D. (Malta)	Do	On leave	
J. H. Neill, M.B., CH.B. (Edin.)	Do	Entebbe	Also Acting M.O.H. Entebbe
J. A. Quin, M.D. (Dub.), B.A., B.CH., B.A O. (Dub.)	Do	On leave	
F. O. Simpson, M.R.C.S., L.R.C.P., D.P.H. (Irel.), R.C.P.S.I.	Do	Mbarara	
S. R. Eccles-Davies, B.A. (Camb.), M.R.C.S., L.R.C.P. (Lond.)	Do	Kampala	
H. N. Pelly, L.R.C.P. & S. (Edin.), L.R.F.P.S. (Glas.), D.T.M. (Liverp.)	Do	Moroto	
W. P. Kelly, L. & L.M.R.C.P.S., F.R.C.S., D.P.H. (Irel.)	Do	Lira	
M. Lamont (Mrs.), M.D., B.S. (Lond.), D.P.H.	Do	Kampala	
H. G. Cimino, M.D. (Rome), M.D. (Freiburg)	Do	Masindi	
Capt. J. E. Brooks, R.A.M.C., M.B., CH.B. (Manchester)	Do	Karamoja	
J. C. Caldwell, M.B., C.M. (Edin.)	Do	Kampala	
R. G. Griffin, L.M. & L.R.C.P. & L.R.C.S. (Irel.), D.P.H. (Dub.)	Do	Mbale	
A. C. Rendle, M.D., B.C., M.R.C.S., L.R.C.P., D.P.H. (Camb.)	Do	Gulu	
L. E. S. Sharp, B.A., M.B., B.C. (Camb.), M.R.C.S., L.R.C.P.	Do	Kabale	C.M.S. Doctor—part time.
Major G. J. Keane, D.S.O., R.A.M.C., M.D., M.B., CH.B., D.P.H., D.T.M. (Liverp.)	Specialist Officer, V. D.	Kampala	
Mr. W. F. Fiske	Entomologist	Entebbe	
C. J. Baker, M.R.C.S., L.R.C.P.	Principal Sanitation Officer	Entebbe	
J. M. Collyns, M.B., D.P.H. (Lond.), M.R.C.S., L.R.C.P.	Sanitation Officer	Entebbe	Also Acting Deputy P.M.O.
H. L. Duke, O.B.E., B.A., M.D., B.C., D.T.M. & H. (Camb.)	Bacteriologist	On leave	
M. Martin (Miss), M.B., CH.B. (Edin.), D.P.H., D.T.M. & H. (Lond.)	Assistant Bacteriologist	Entebbe	
Mr. J. Stewart	Laboratory Assistant	Entebbe	
Mr. E. C. Haddon	Do	Entebbe	
Mr. G. S. Bateman, L.D.S.R.C.S. (Eng.)	Dental Surgeon	Entebbe	
Miss E. M. Pratt, A.R.R.C.	Matron	Kampala	
Miss D. M. Ivers	Nursing Sister	Entebbe	
Miss A. Mason	Do	Jinja	
Miss N. M. Adams	Do	Entebbe	
Miss C. M. Beville	Do	Entebbe	
Miss M. J. Mackertich, R.R.C.	Do	Kampala	
Miss E. M. Stringer	Do	Kampala	
Mr. H. Flint	Office Superintendent	Entebbe	
Mr. H. T. Bott	Clerk to P.S.O.	Entebbe	Also Secretary to Factories Board.
Mr. F. G. Caldwell	Clerk, P.M.O's Office	Entebbe	
Mr. E. S. Smout	Superintendent, Venereal Diseases	Kampala	
Mr. P. J. L. Waters	Medical Store-keeper	On leave	
Mr. C. O'Connor	Temporary Sleeping Sickness Inspector	Mbale	
Mr. C. Chorley, M.P.S.	Relief Medical Storekeeper	Entebbe	

TABLE C.

RETURN SHOWING THE ASIATIC MEDICAL AND CLERICAL STAFF.

Name.	Rank.	Where Stationed on 31st December, 1921.	REMARKS.
Achhru Ram, Rai Sahib ...	Assistant Surgeon ...	Kampala	
Kanade, K. R. ...	Senior Sub-Assistant Surgeon	Mbale	
Karkhanis, A. D. ...	Do ...	Jinja	
Gokal Chand ...	Sub-Assistant Surgeon...	Masaka	
Hukam Singh, I.O.M. ...	Do ...	Jinja	Seconded from I. M. D.
Diwan Chand ...	Do ...	Bombo	Do
Ram Chand ...	Do ...	Karamoja	
Mangal Sain ...	Do ...	Entebbe	
Andrews, C. P. ...	Do ...	Masindi	
Ahmed Din ...	Do ...	Lira	
Raja, K. J. ...	Do ...	Namasagali	
Mahindra, S. R. ...	Do ...	Kitgum	
Sheth, P. K. ...	Do ...	Gulu	
Rao, A. V. S. ...	Do ...	Butiaba	
Thadani, H. M. ...	Do ...	Fort Portal	
Faquir Chand ...	Do ...	On leave	
Karam Dad ...	Do ...	Mbarara	
Lahna Singh ...	Do ...	Entebbe	
Menon, P. K. K. ...	Do ...	Mubendi	
Thakar, C. P. ...	Do ...	Moroto	
Ghulam Haider ...	Compounder ...	Soroti	
Mela Ram ...	Do ...	Jinja	
Fernandes, E. F. X. ...	Do ...	Hoima	
Balmukand Gopal ...	Do ...	Arua	
Chitale, V. V. ...	Do ...	Kabale	
Ahmed Din Ahmedi ...	Do ...	Kampala	
D'Souza, M. E. D. ...	Asiatic Asst. Storekeeper	Entebbe	
D'Souza, M. N. ...	Clerk ...	Entebbe	
Sohan Singh Sandhu ...	Do ...	Entebbe	
Moniz, C. ...	Do ...	Entebbe	
Gunewardene, D. J. ...	Do ...	Entebbe	
D'Souza, J. C. ...	Do ...	Entebbe	
Martyris, S. X. ...	Do ...	Jinja	
D'Mello, F. H. ...	Do ...	Kampala	
Sant Singh ...	Do ...	Kampala	

TABLE D.

SHOWING PRESENT STAFF AND HOSPITAL ACCOMMODATION FOR EACH DISTRICT, 1921. (MEDICAL AND SANITARY BRANCHES COMBINED).

BUGANDA KINGDOM.

	Entebbe.	Masaka.	Mengo.	Mubendi.
Area in square miles ...	6,294	4,602	5,851	5,623
Population Europeans ...	229 } 156,223	58 } 119,836	473 } 333,977	42 } 139,314
Population Asiatics ...	441	299	1.513	44
Population Natives ...	155,553	119,479	331,991	139,228
European Staff ...	1 Medical Officer 2 Nursing Sisters	1 Medical Officer	1 S. M. O. 1 M. O. 1 S. O. 1 Matron 2 N. Sisters	1 Medical Officer
Asiatic Staff ...	1 S. A. S.	1 S. A. S.	1 A. S. 1 S.A.S. 1 Compounder 2 Clerks	1 Sub-Assistant Surgeon.
Native Staff Medical ...	8	3	19	2
,, ,, Sanitation ...	4	5	30	3
Numbers of Beds:—				
A. Med. and Surg. European	6 } 31	— } 11	12 } 110	— } 3
A. Med. and Surg. Asiatic ...	3	—	—	—
A. Med. and Surg. Native ...	22	11	98	3
B. Isolation European ...	— } Nil	— } Nil	— } Nil	— } Nil
B. Isolation Asiatic ...	—	—	—	—
B. Isolation Native ...	—	—	—	—

Mengo includes the Stations Kampala and Bombo, Kyetume S.S. Camps and the Townships of Port Bell, Mbale and Namirembe.

Table D (a).

EASTERN PROVINCE.

		Busoga.	Bukedi.	Teso.	Lango.	Lobor and Karamoja.
Area in square miles		10,445	3,088	4,738	5,099	12,922
Population	Europeans	131	52	52	13	
	Asiatics	1,427 } 222,666	718 } 393,472	510 } 266,958	296 } 201,940	67,000
	Natives	221,108	392,702	266,396	201,631	
European Staff		1 S. M. O. 1 N. Sister 1 Plague Inspector	1 Medical Officer 1 S. S. Inspector	1 Medical Officer	1 Medical Officer	1 Medical Officer
Asiatic Staff		1 S. S. A. S. 1 S. A. S. 1 Compounder 1 Clerk	1 S. S. A. S. 1 Compounder	1 Compounder	1 S. A. S.	1 S. A. S.
Native Staff—						
Medical and Surgical		10	7	4	3	2
Sanitation		13	17	10	5	—
Number of Beds:—						
A. Med. and Surg.	European	4	—	1	—	—
	Asiatic	4 } 24	6 } 52	— } 1	— } Nil	— } Nil
	Native	16	46	—	—	—
B. Isolation	European	—	—	—	—	—
	Asiatic	6 } 12	— } Nil	— } Nil	— } Nil	— } Nil
	Native	6	—	—	—	—

Busoga includes the Stations Jinja and Namasagali and the Townships of Iganga, Kamuli and Kaliro.

Table D (b).

WESTERN PROVINCE.

		Ankole.	Toro.	Kigezi.
Area in square miles		6,131	5,579	2,056
Population	Europeans	32	68	8
	Asiatics	101 } 251,289	74 } 117,539	23 } 206,121
	Natives	251,156	117,397	206.090
European Staff		1 Medical Officer	—	1 Med. Officer (½ time)
Asiatic Staff		1 S. A. S.	1 S. A. S.	1 S. A. S.
Native Staff:—				
Medical and Surgical		3	2	3
Sanitation		6	1	2
Number of Beds:—				
A. Medical and Surg.	European	—	—	—
	Asiatic	— } 14	— } Nil	— } 6
	Native	14	—	6
B. Isolation	European	—	—	—
	Asiatic	— } Nil	— } Nil	— } Nil
	Native	—	—	—

(1) Dr. Ashton Bond, of the Church Missionary Society, Toro, has attended urgent cases for the Government all through the year. A Sub-Assistant Surgeon has been there the latter half of the year.

(2) Dr. Sharpe, of the Church Missionary Society, Kigezi, attends urgent cases and may be called upon to give up to half his time in Government Service.

Table D (c).

NORTHERN PROVINCE.

		Bunyoro.	Gulu.	Chua.	West Nile.
Area in square miles		5,619	5,995	7,007	4,113
Population	Europeans	60	18	13	20
	Asiatics	125 } 98,758	13 } 83,903	9 } 71,280	11 } 162,830
	Natives	98,573	83,872	71,258	162,799
European Staff		1 M. O.	1 M. O.	1 M. O.	1 M. O.
Asiatic Staff		2 S. A. S's. 1 Compounder	1 S. A. S.	1 S. A. S.	1 Compounder
Native Staff—					
Medical and Surgical		11	5	3	3
Sanitation		7	5	2	3
Number of beds:—					
A. Medical and Sur.	European	—	—	—	—
	Asiatic	— } 17	— } 6	— } Nil	— } 6
	Native	17	6	—	6
B. Isolation	European	—	—	—	—
	Asiatic	— } Nil	— } Nil	— } Nil	— } Nil
	Native	—	—	—	—

(1) Bunyoro includes three Government Stations:— Masindi, Hoima and Butiaba.

(2) Chua District had no Medical Officer until the end of December, until then it was under the Medical Officer, Gulu.

TABLE D (D).—In addition to the above Buganda Kingdom has the Venereal Diseases Hospital at Mulago.

Area in square miles		22,370
Population	Europeans	802
	Asiatics	2,297
	Natives	774,753
		777,852
European Staff		1 Specialist Officer, 3 Medical Officers 1 Nursing Sister, 1 Superintendent
Asiatic Staff		1 Clerk
Native Staff		52*
Number of Beds		131

* Includes those at branch dispensaries and also those in training.

N.B.—In the above tables:—

(1) Native Staff "Medical and Surgical" includes all Hospital and Dispensary Attendants Dressers, etc. "Sanitation" includes all Plague Inspectors, Vaccinators, Headmen of Anti-Malarial Gangs and Sleeping Sickness Inspectors.

Menial Staff of cooks, water boys, wood boys, shamba boys and sweepers are not shewn.

(2) Number of Beds.—All are shown, even those in temporary unsuitable buildings. Temporary grass huts with no beds as in general use for Isolation Hospitals are not shewn.

TABLE VI.

RETURN OF DISEASES AND DEATHS (IN-PATIENTS) FOR THE YEAR 1921.

Diseases.	Remaining in Hospital at end of 1920.	Yearly Total.		Total Cases Treated.	Remaining in Hospital at end of 1921.
		Admissions.	Deaths		
INFECTIVE DISEASES :—					
Beri-Beri ...	—	7	3	7	—
Cerebro-Spinal Fever ...	—	13	8	13	1
Chicken-Pox ...	6	45	—	51	12
Dysentery ...	1	96	15	97	1
Enteric ...	—	3	1	3	—
Erysipelas ...	—	1	—	1	—
Gonorrhœa ...	18	185	6	203	13
Influenza ...	3	77	7	80	2
Leprosy (*a*) Nodular ...	—	8	—	8	—
(*b*) Anæsthetic ...	—	3	—	3	—
Malaria (*a*) Tertian ...	3	17	—	20	2
(*b*) Aestivo-autumnal ...	3	147	11	150	3
(*c*) Chronic Malaria ...	1	21	3	22	2
(*d*) Malaria—variety unspecified	3	229	1	232	—
(*e*) Black-water ...	1	7	3	8	—
Measles ...	—	20	—	20	3
Plague ...	1	199	127	200	1
Pneumonia ...	5	102	46	107	1
Relapsing Fever ...	—	143	6	143	2
Rheumatic Fever ...	—	1	—	1	—
Septicæmia ...	1	1	2	2	—
Trypanosomiasis (Sleeping Sickness) ...	1	130	13	131	7
Small-Pox ...	2	35	8	37	—
Syphilis (*a*) Primary ...	3	101	—	104	22
(*b*) Secondary ...	40	339	7	379	58
(*c*) Tertiary ...	28	217	6	245	36
(*d*) Inherited ...	1	54	3	55	16
Tuberculosis ...	—	11	3	11	1
Yaws ...	11	365	3	376	24
P. U. O. ...	5	358	22	363	1
Mumps ...	—	6	—	6	1
Paratyphoid ...	—	2	—	2	—
Others ...	2	4	1	6	—
INTOXICATIONS :—					
Alcoholism ...	—	1	—	1	—
GENERAL DISEASES :—					
Anæmia ...	—	11	2	11	1
Diabetes ...	1	4	—	5	—
Hodgkin's Disease ...	—	1	1	1	—
Scurvy ...	—	2	1	2	—
Debility ...	4	57	11	61	8
Anthrax ...	—	1	—	1	—
LOCAL DISEASES :—					
Diseases of the Nervous System :—					
Sub-section 1.					
Neuritis ...	—	2	—	2	1
Meningitis ...	—	3	3	3	—
Others ...	—	9	3	9	—
Sub-section 2.					
Apoplexy ...	—	2	1	2	—
Paralysis ...	—	17	2	17	3
Epilepsy ...	2	10	1	12	1
Neuralgia ...	—	4	—	4	—
Carried forward ...	146	3,071	330	3,217	223

TABLE VI.—RETURNS OF DISEASES AND DEATHS (IN-PATIENTS) FOR YEAR 1921—*contd.*

Diseases.	Remaining in Hospital at end of 1920.	Yearly Total.		Total Cases Treated.	Remaining in Hospital at end of 1921.
		Admissions.	Deaths.		
Brought forward ...	146	3,071	330	3,217	223
Diseases of the Nervous System—*contd.*					
Sub-Section 2—*contd.*					
Hysteria ...	—	2	—	2	—
Others ...	—	2	—	2	—
Mental Diseases :—					
Sub-Section 3.					
Mania ...	—	4	1	4	1
Melancholia ...	—	2	—	2	—
Dementia ...	—	3	1	3	—
Delusional Insanity ...	—	4	2	4	—
Neurasthenia ...	1	2	—	3	—
Others ...	—	2	1	2	—
Diseases of the Eye—					
Conjunctivitis ...	1	26	—	27	—
Keratitis ...	—	5	—	5	1
Ulceration of Cornea ...	—	15	—	15	1
Iritis ...	—	6	—	6	—
Cataract ...	—	2	—	2	—
Others ...	1	4	—	5	—
Diseases of the Ear—					
Inflammation ...	1	10	—	11	1
Others ...	—	7	—	7	—
Diseases of the Nose—					
Rhinitis ...	—	16	—	16	—
Others ...	—	7	—	7	—
Diseases of the Circulatory System—					
Pericarditis ...	—	1	—	1	—
Endocarditis ...	—	2	1	2	—
Valvular Mitral ...	—	4	2	4	1
Aortic ...	—	1	1	1	—
Arterial Sclerosis ...	—	1	1	1	—
Others ...	—	6	2	6	—
Diseases of the Respiratory System—					
Laryngitis ...	—	2	—	2	—
Bronchitis ...	4	153	6	157	2
Broncho-pneumonia ...	—	39	3	39	—
Pleurisy ...	—	24	—	24	—
Phthisis ...	—	6	4	6	—
Others ...	—	11	3	11	1
Diseases of the Digestive System—					
Stomatitis ...	—	7	—	7	—
Caries of teeth ...	—	16	—	16	—
Glossitis ...	—	1	—	1	—
Sore Throat ...	—	6	—	6	—
Inflammation of Tonsils ...	—	20	—	20	—
Gastritis ...	—	5	—	5	—
Hæmatemesis ...	—	1	—	1	—
Dyspepsia ...	—	18	—	18	—
Enteritis ...	—	6	3	6	—
Appendicitis ...	—	3	—	3	—
Colitis ...	—	23	—	23	—
Hernia ...	1	45	4	46	3
Diarrhœa ...	1	87	5	88	—
Constipation ...	—	2	—	2	—
Colic ...	—	23	—	23	—
Hæmorrhoids ...	—	3	—	3	1
Hepatitis—Acute ...	—	4	—	4	1
Abscess ...	—	1	—	1	—
Cirrhosis ...	—	4	—	4	—
Jaundice ...	—	7	—	7	—
Peritonitis ...	—	4	4	4	—
Ascites ...	—	7	3	7	—
Others ...	—	14	3	14	—
Diseases of the Lymphatic System—					
Splenitis ...	—	2	—	2	—
Inflammation of Lymphatic Gland ...	1	45	2	46	1
Suppuration of Lymphatic Gland ...	—	16	—	16	—
Lymphangitis ...	—	1	—	1	—
Elephantiasis ...	—	3	—	3	2
Others ...	—	5	—	5	—
Diseases of the Urinary System—					
Acute Nephritis ...	—	4	1	4	—
Bright's Disease ...	2	7	6	9	—
Cystitis ...	—	4	—	4	—
Carried forward ...	159	3.834	389	3.993	239

TABLE VI.—RETURNS OF DISEASES AND DEATHS (IN-PATIENTS) FOR YEAR 1921—*contd.*

Diseases.	Remaining in Hospital at end of 1920.	Yearly Total.		Total Cases Treated.	Remaining in Hospital at end of 1921.
		Admissions.	Deaths.		
Brought forward ...	159	3,834	389	3,993	239
Diseases of the Urinary System—*contd.*					
Vesical Calculus ...	—	1	—	1	—
Hæmaturia ...	—	3	—	3	—
Others ...	—	3	1	3	—
Diseases of the Generative System—					
Male Organs—					
Urethritis ...	—	3	—	3	—
Gleet ...	—	3	1	3	—
Stricture ...	—	10	—	10	3
Prostatitis ...	—	2	—	2	2
Soft Chancre ...	7	62	—	69	3
Condyloma ...	—	3	—	3	—
Inflammation of Scrotum ...	—	3	—	3	—
Hydrocele ...	—	17	—	17	4
Orchitis ...	1	21	—	22	1
Epididymitis ...	—	1	—	1	—
Abscess of Testicle ...	—	2	—	2	—
Others ...	1	43	1	44	2
Female Organs—					
Endometritis ...	—	3	—	3	—
Vaginitis ...	—	8	—	8	—
Leucorrhœa ...	—	3	—	3	—
Abortion ...	—	4	1	4	—
Delayed Labour ...	—	7	3	7	1
Retained Placenta ...	—	1	—	1	—
Abscess of Breast ...	—	3	—	3	—
Parturition ...	1	18	1	19	—
Others ...	—	11	—	11	1
Diseases of Organs of Locomotion—					
Osteitis ...	—	3	—	3	1
Arthritis ...	2	10	2	12	1
Bursitis ...	—	1	—	1	—
Myalgia ...	2	113	1	115	1
Synovitis ...	—	11	—	11	1
Others ...	—	10	1	10	1
Diseases of Connective Tissue—					
Cellulitis ...	2	39	—	41	3
Abscess ...	7	145	1	152	5
Elephantiasis ...	—	9	1	9	1
Others ...	—	3	—	3	—
Diseases of the Skin—					
Urticaria ...	—	4	—	4	—
Eczema ...	—	12	—	12	—
Boil ...	2	15	—	17	—
Carbuncle ...	—	3	—	3	—
Herpes ..	—	2	—	2	—
Psoriasis ...	1	6	—	7	—
Oriental Sore ...	—	14	—	14	1
Tinea ...	—	4	—	4	—
Scabies ...	2	31	—	33	—
Prickly Heat ...	—	1	—	1	—
Ulcers ...	27	203	2	230	40
Others ...	—	11	2	11	4
Injuries—					
General ...	4	48	5	52	3
Local ...	51	693	41	744	53
Tumours ...	—	11	—	11	2
Others unspecified ...	—	2	—	2	1
Poisons ...	—	4	1	4	—
Snake Bite ...	—	11	—	11	—
Parasites—Animal—					
Cestoda—					
Taenia Solium ...	—	1	—	1	—
Others unspecified ...	—	3	2	3	—
Nematoda—					
Ascaris ..	—	1	—	1	—
Dracunculus ...	—	29	—	29	—
Filariasis ...	—	9	—	9	—
Ankylostomiasis ...	—	4	1	4	—
Others unspecified ...	—	4	1	4	—
Insecta—					
Myiasis ...	—	1	—	1	1
Jiggers ...	—	13	—	13	5
TOTAL ...	269	5,553	458	5,822	380

Table VII.

Return of Diseases (In and Out-Patients) for the Year 1921.

Diseases.	Total Cases.	Deaths.
INFECTIVE DISEASES :—		
Beri-Beri	15	6
Cerebro-Spinal Fever	36	30
Chicken-Pox	119	—
Dengue	1	—
Dysentery	609	30
Endocarditis—Infective	1	—
Enteric	10	3
Paratyphoid	3	1
Erysipelas	7	—
Gonorrhœa	1,686	6
Influenza	799	9
Leprosy (*a*) Nodular	19	—
(*b*) Anæsthetic	10	—
Malaria (*a*) Tertian	139	—
(*b*) Quartan	101	—
(*c*) Aestivo-autumnal	5,059	15
(*d*) Chronic Malaria	306	6
(*e*) Malaria—variety unspecified	2,424	4
(*f*) Blackwater	46	12
Measles	72	—
Plague	339	257
Pneumonia	243	70
Relapsing Fever	269	5
Mumps	94	—
Rheumatic Fever	6	—
Septicæmia	5	2
Trypanosomiasis (Sleeping Sickness)	133	13
Small-Pox	36	9
Syphilis (*a*) Primary	807	—
(*b*) Secondary	1,353	5
(*c*) Tertiary	2,097	8
(*d*) Inherited	541	3
Tetanus	6	—
Tuberculosis	14	1
Whooping Cough	94	1
Yaws	1,284	4
P. U. O.	4,282	26
Anthrax	1	—
Others	55	1
INTOXICATIONS :—		
Alcoholism	1	—
Others	3	—
GENERAL DISEASES :—		
Anæmia	191	6
Diabetes	6	1
Exophthalmic Goitre	1	—
Gout	4	—
Hodgkin's Disease	1	1
Purpura	2	—
Rickets	2	—
Scurvy	12	1
Debility	248	5
Others	457	6
LOCAL DISEASES :—		
Diseases of the Nervous System :—		
Sub-section 1.		
Neuritis	98	—
Meningitis	2	1
Myelitis	1	—
Abscess of Brain	1	—
Congestion of Brain	1	—
Neurasthenia	6	—
Others	138	3
Sub-section 2.		
Apoplexy	8	2
Paralysis	28	2
Chorea	6	—
Epilepsy	49	1
Neuralgia	819	—
Hysteria	20	—
Others	1,104	—
Carried forward	26,330	556

Table VII.—Returns of Diseases (In and Out-Patients) for Year 1921—*contd.*

Diseases.	Total Cases.	Deaths.
Brought forward	26,330	556
Local Diseases—*contd.*		
Diseases of the Nervous System—*contd.*		
Sub-Section 3.		
Idiocy	2	—
Mania	8	1
Melancholia	5	—
Dementia	3	1
Delusional Insanity	7	2
Others	2	1
Diseases of the Eye—		
Conjunctivitis	4,087	—
Keratitis	66	—
Ulceration of Cornea	70	—
Iritis	107	—
Optic Neuritis	2	—
Cataract	26	—
Others	149	—
Diseases of the Ear—		
Inflammation	742	—
Other Diseases	601	—
Diseases of the Nose—		
Rhinitis	468	—
Others	128	—
Diseases of the Circulatory System—		
Pericarditis	2	—
Endocarditis	15	2
Valvular Mitral	25	3
Aortic	6	2
Arterial Sclerosis	1	1
Aneurism	1	—
Others	116	3
Diseases of the Respiratory System—		
Laryngitis	94	—
Bronchitis	10,905	10
Broncho-pneumonia	90	13
Emphysema	4	—
Pleurisy	105	1
Empyema	1	—
Phthisis	22	4
Asthma	117	2
Others	96	—
Diseases of the Digestive System—		
Stomatitis	604	—
Caries of teeth	876	—
Glossitis	18	—
Sore Throat	613	—
Inflammation of Tonsils	377	1
Gastritis	91	—
Ulceration of Stomach	14	—
Hæmatemesis	11	—
Dilatation of Stomach	2	1
Dyspepsia	2,242	—
Enteritis	19	4
Appendicitis	8	—
Colitis	83	—
Hernia	142	5
Diarrhœa	2,000	7
Constipation	3,831	—
Colic	1,107	—
Hæmorrhoids	52	2
Abscess of liver	3	—
Pancreatitis	1	—
Hepatitis—Acute	26	—
Cirrhosis	10	—
Jaundice	59	—
Peritonitis	4	4
Ascites	21	3
Others	130	1
Diseases of the Lymphatic System—		
Splenitis	33	—
Inflammation of Lymphatic Gland	384	2
Carried forward	57,164	632

TABLE VII.—RETURNS OF DISEASES (IN AND OUT-PATIENTS) FOR YEAR 1921—*contd.*

Diseases.	Total Cases.	Deaths
Brought forward	57,164	632
Diseases of the Lymphatic System—*contd.*		
Suppuration of Lymphatic Gland	127	—
Lymphangitis	4	—
Elephantiasis	2	—
Others	29	—
Diseases of the Urinary System—		
Acute Nephritis	12	3
Bright's Disease	22	8
Renal Colic	1	—
Cystitis	27	—
Vesical Calculus	1	—
Suppression	1	—
Hæmaturia	2	—
Chyluria	2	—
Others	19	1
Diseases of the Generative System—		
Male Organs—		
Urethritis	16	—
Gleet	36	1
Stricture	35	—
Prostatitis	7	—
Soft Chancre	461	—
Condyloma	66	—
Inflammation of Scrotum	12	—
Hydrocele	42	—
Orchitis	154	—
Epididymitis	7	—
Abscess of Testicle	9	—
Others	26	—
Female Organs—		
Ovarian Cyst	1	—
Endometritis	13	—
Displacement of Uterus	8	—
Vaginitis	20	—
Amenorrhœa	10	—
Dysmenorrhœa	35	—
Menorrhagia	53	—
Leucorrhœa	55	—
Abortion	47	2
Delayed Labour	23	4
Postpartem Hæmorrhage	3	—
Retained Placenta	5	1
Puerperal Septicæmia	7	2
Mastitis	25	—
Abscess of Breast	29	—
Parturition	17	—
Others	86	1
Diseases of Organs of Locomotion—		
Osteitis	75	—
Arthritis	112	2
Spondylitis	3	—
Bursitis	27	—
Myalgia	5,819	4
Synovitis	167	—
Others	217	—
Diseases of Connective Tissue—		
Cellulitis	950	2
Abscess	1,008	1
Elephantiasis	31	1
Others	475	1
Diseases of the Skin—		
Urticaria	163	—
Eczema	319	—
Boil	658	—
Carbuncle	11	—
Herpes	50	—
Psoriasis	40	—
Oriental Sore	319	1
Tinea	197	—
Scabies	3,810	—
Acne	27	—
Prickly Heat	12	—
Ulcers	4,726	2
Others	817	1
Carried forward	78,754	670

Table VII—Return of Diseases (In and Out-Patients) for the Year 1921—*contd.*

Diseases.	Total Cases.	Deaths.
Brought forward...	78,754	670
Injuries—		
General ...	277	10
Local ...	10,655	41
Snake Bite ...	22	—
Tumours ...	49	1
Malformations ...	2	—
Poisons ...	11	—
Parasites—Animal		
Protozoa ...	1	1
Trematodo (Flukes) ...	6	—
Others—unspecified ...	2	2
Cestoda—		
Taenia Solium ...	65	—
Taenia Saginata ...	8	—
Others—unspecified ...	8	—
Nematoda—		
Ascaris ..	90	—
Dracunculus ...	128	—
Filariasis ...	47	—
Ankylostomiasis ...	33	—
Oxyuris ...	1	—
Others ...	50	1
Insecta—		
Jiggers ...	194	—
Others ...	63	—
Total ...	90,466	726
Surgical Operations ...	2,463	

Section III.

SANITATION.

General review of work done.

ADMINISTRATIVE.

On the return of Dr. Collyns, Sanitation Officer, from leave in April, I was relieved of the duties of Medical Officer of Health, Kampala.

Dr. Collyns took over the duties of Deputy Principal Medical Officer on 2nd July, when Dr. Neilson was appointed Medical Officer of Health, Kampala.

A qualified European Sanitary Inspector, appointed by the Colonial Office, assumed duty at Kampala in May.

As the appointment of a qualified Sanitary Inspector for Jinja had not been filled up, a local unqualified European was engaged to undertake his duties.

I have been unable to visit all stations this year, because after leaving Kampala in May I was engaged for two-and-a-half months in connection with the plague epidemics in Busoga.

Lira, Soroti, Mbale, the Lake Kioga ports, and Masaka and Mbàrara were inspected.

LEGISLATION, Etc.

(1) Under the infectious Diseases Ordinance, Entebbe, in January, and Masaka, in July, were declared "infected places," and the declarations remained in force till the end of the year, as also the declarations made in 1920 as regards Kampala, Jinja, Busoga, Bukedi, Teso and Lango.

(2) Under the Townships Ordinance, Nabieso and Tororo (Eastern Province) have been proclaimed Townships during the year.

(3) A new and comprehensive Infectious Diseases Ordinance is in draft, and will, it is hoped, be enacted early in 1922.

THE FACTORIES BOARD.

The Board met monthly at Kampala as usual.

A Factories Inspector was appointed in March, and from a sanitation point of view this appointment is welcomed, as the Principal Sanitation Officer will be kept in touch, through the Inspector, with the manner in which Sanitary Rules are carried out.

The Factories Inspector in his Annual Report states that very few ginneries at the beginning of the year were fitted with closets, but owners are now installing earth closets and persuading the natives to use these conveniences.

A detailed account of the work of the Factories Inspector, who comes under the staff of the Public Works Department, will be found in the Annual Report of that Department.

The activities of the Factories Inspector has much increased the clerical work of the Board, and some assistance or re-arrangement will be necessary when Registration of Factories, etc., provided for in new Rules now under consideration, comes into force.

The Secretary (Mr. H. T. Bott) was on leave for nearly eight months, during which time the secretarial duties were undertaken by Mr. H. Flint.

CENTRAL TOWN PLANNING BOARD.

The Board held nine meetings during the year.

The members of the Board inspected, when opportunity offered, the various sites, etc., which came up for consideration.

Segregation, etc.

In the early part of the year, the Jinja Town Planning Scheme was much discussed, but as the whole matter has been referred to the Secretary of State, little or no progress can be made pending his instructions.

Decisions on this question relating to other townships are held up, pending receipt of the Secretary of State's instructions.

PREVENTIVE MEASURES.

Insect-Borne Diseases.

(*a*) Malaria.

Anti-Malarial Measures.—

(*a*) *Major.—*

The Kampala Swamp.—Satisfactory progress has been made in the drainage this year.

Though only 1,050 feet of contour intercepting drains have been cut, piped, rubbled and filled, this length of drain has effectually dealt with a large area, in which also a hollow 7,670 square feet was filled in to an average depth of two feet.

Besides this, a very large area of swampy ground formerly intersected by open ditches has been rendered dry on the surface by filling in these ditches with coarse rubble to the length of 5,272 feet. This entailed considerable labour and expense as suitable rubble had to be carried for a distance of over 1½ miles.

These two areas formerly provided a vast breeding ground for *anopheles* adjacent to the Bazaar, which is a hot-bed of malaria.

If the same rate of progress can be maintained for the next three years an appreciable reduction in the malarial incidence should result.

The routine work of clearing the main channels and planting has been maintained as usual.

The drainage of swamps at Soroti, Masindi and Arua has been maintained.

(*b*) *Minor.*

Anti-Malarial gangs have been maintained as in previous years.

Considerable addition to the bush clearing has been made at Entebbe.

The increased cost of labour this year in Kampala has hampered the work of clearing in the township.

(*b*) Spirillum Fever.

Spirillum Fever continues to be a scourge in the Western Province.

Dr. Simpson reports that an intelligent native has been employed in searching for ticks in the earth floors of native houses in Mbarara township.

By systematically extracting the ticks in this manner, Dr. Simpson claims that the ticks have been reduced to a minimum, and Spirillum Fever has been eradicated from the town.

EPIDEMIC DISEASES.

Plague.

This disease has this year broken out with alarming violence in many places hitherto free, while those places visited in 1920 have remained the seat of endemic plague.

I attribute the increase mainly to the invasion and prolific breeding of the black rat, which has been assisted in many places by the conditions brought about by the depression in the cotton trade. (*Vide* Appendix).

In the Buganda Kingdom there have been four seperate foci of infection, as follows :—

1. *Kampala Township and Neighbourhood.*—There were 138 cases, only five of which were in the township, and the remainder were within a ten miles radius to the South and East. The disease was endemic in character, the residue of the epidemic of 1920, sporadic cases appearing at intervals throughout the year.

2. *Entebbe Peninsular.*—Infection probably brought from Kampala, but may have been a recrudescence of the outbreak in 1917. The outbreak began in January and continued till December. The Police and K.A.R. Lines became infected and were evacuated for several weeks.

3. *Masaka.*—A mild outbreak, with 37 cases and 24 deaths in six months. The origin was not traced; black rats were found to be prevalent. The cases were either confined to the Bazaar or the immediate neighbourhood.

4. *Kiagwe County.*—(*a*) Buikwe area between Kampala and Jinja, the infection being brought across the Lake ferry from the latter place in April. Here the black rats were very numerous. 186 cases occurred in this area chiefly during June and July. It was most severe in a group of villages about 12 miles from Jinja occupied by people from Buvuma Island.

(*b*) Nakifuma outbreak in the Bukoba area the infection being probably introduced from Busoga (Kamuli area) by means of the Bugonja ferry across the Nile. Cases were first reported in May, but on investigation it appeared certain that many unreported cases had occurred previously.

This is an important cotton growing area. 77 cases with 77 deaths were reported. 38 further cases occurred in other parts of Kiagwe county during the year. These were cases probably infected in one of the above areas or in the Kampala area.

In Bukedi the disease, as in 1920, was confined to the Bugwe, Samia and Budama counties, and Mbale township. Here again the distribution of infection corresponds to that of the black rat.

In Busoga there were four main centres of infection, *viz.* :—

1. *Jinja*, where a few cases continued to appear from time to time in various parts of the township. The police lines became heavily infected and were evacuated and burnt in May.

2. *Kamuli*, where the most serious epidemic took place which began in January; the infection being introduced *via the* Railway from Jinja to Mbulamuti.

3. *Nasuti*, a few miles North of Iganga—a sequel to the Iganga epidemic of 1920.

4. *Wakoli's Country*, in which the infection probably spread from Budama in Bukedi.

In Lango, mild outbreaks of human and rat plague took place near Lira, and also at Ekwera and Kabiramaido.

At Kalaki rats which shewed *B. Pestis* were found dying but no human cases of plague followed. There are no black rats in Lango. (*Vide* Appendix).

Generally speaking the disease was at its worst during May, June, July and August, and by December had almost disappeared in most places.

PREVENTIVE MEASURES.

IN GENERAL : Burning the infected houses (disinfection in the towns), isolation of the sick, segregation of the contacts, inoculation with Haffkine's Prophylactic, the distribution of pamphlets in the vernacular with instructions to chiefs and advice to the people as to domestic cleanliness and rat destruction.

57,016 inoculations were done—these were mostly performed on travellers leaving infected districts and ports, as well as on the inhabitants of infected towns, and as far as possible on contacts. The available amount of vaccine was too small to protect the population of infected districts.

Kamuli Epidemic.—In January, Dr. Davies was detailed to conduct inoculations and other preventive measures, but had to be recalled while the epidemic was still on the increase.

The Senior Medical Officer of the District was unable to leave Jinja often enough to deal effectively with the situation, and the preventive measures had to be left to the Native Plague Inspectors and the Chiefs.

When I was relieved at Kampala in May, I visited Kamuli with the District Commissioner, and held a conference with the chiefs and exhorted them to organise rat driving, etc., but when I returned three weeks later, I found the death rate steadily increasing, and the epidemic had a firm hold over an area some twenty-five miles in diameter which is covered with cultivation and thickly populated by people who occupied scattered groups of houses.

Formation of large segregation camps was impracticable, so that the control of contacts could not be efficiently maintained, and it was found impossible to check either by force or persuasion the disastrous custom indulged in by the relatives of the sick, who gather round the dying and flock to "wake" the dead.

It was, of course, still more impossible to block the main channel of infection—the inter-house migration of the infected rats.

I, therefore, considered that every house in the area was potentially infected and the only remedy appeared to be total evacuation; but at first I hesitated to advocate such a drastic measure because I anticipated opposition from the inhabitants (in which I was wrong), and because if the people were removed to a distance famine might complicate matters.

However, I was able to remove the inhabitants of one circumscribed group of heavily infected houses into the adjacent jungle, and in a few days this had such a marked effect on the death-rate that it was possible to demonstrate to the chiefs and people the necessity of applying the measure to the whole infected area.

By this time the people were thoroughly frightened, as the death roll had reached over sixty per day, and fresh areas were being involved.

The evacuation was eventually carried into effect, some 100,000 people camping in the bush adjacent to their shambas, to which they were allowed to return in the daytime to get food, but as it was found that they were still making use of their houses, it was decided to remove and burn all the thatch, leaving the interior of the houses exposed to the weather.

This had the desired effect, and the epidemic rapidly died out.

Meanwhile war was waged on the rats, and 157,000 were killed in June and another 40,000 in July.

All ferries and rail and road approaches to the infected area were closed to travellers, except for a few with special permits.

In dealing with this epidemic, I had every assistance from the Administrative Officers, especially from Mr. Nason, A.D.C., who remained with me in the infected area for several weeks, also from the local Saza Chief and the R.C. Fathers at Kamuli.

Mr. R. J. Wilkinson (a local planter) was engaged as Plague Inspector, and did most excellent work in supervising the evacuation.

Dr. Pelly was detailed in July to assist in treatment of the sick, but as no labour could be spared to build hospitals for their reception while the evacuation was proceeding, and it was very difficult to obtain plague patients in the early stages, very little could be done in this direction.

Very little opposition to the evacuation was displayed by the peasants, though the apathetic attitude of some of the minor chiefs caused some trouble and delay. The houses remained de-thatched till each place had been plague-free for a month.

When the Kamuli epidemic had subsided, it was discovered that in and around Nasuti plague had been very severe for some weeks, and had not been reported by the chiefs. This outbreak had no apparent connection with that at Kamuli, as there was a belt of plague-free country intervening. I proceeded there with Dr. Pelly, and a similar evacuation of this infected area soon had a satisfactory result.

Later, a mild epidemic in Wakoli's country was dealt with by Dr. Pelly in a like manner.

In Bukedi, Dr. Vassallo was also very successful in stamping out the epidemic by evacuation of the infected villages combined with vigorous rat hunting. The same method was employed to deal with the Kyagwe outbreak.

Complete evacuation appears to be the only effective method of dealing with severe epidemics of plague in crowded outlying districts by removing the people from contact with the infected fleas and rats in their houses, until some effective way of dealing rapidly with the latter on a large scale can be devised.

SMALLPOX.

Several districts have been entirely free of Smallpox during 1921. The disease, which was prevalent in the Teso and Bukedi districts during 1920, gradually decreased during the early months of 1921, and towards the end of the year very few cases were being reported from these districts. Of 506 cases with 89 deaths reported by Medical Officers during the year, 350 with 58 deaths were from these two districts. In addition to the above figures, native returns give 38 deaths from the disease in the Busoga district. Only 39 cases with 5 deaths occurred within township areas.

One Roman Catholic Father who had not been vaccinated contracted smallpox when visiting the sick in the Smallpox Camp at Muyenga, Kampala, and died of the disease.

With reference to the treatment by Potassium Permanganate recommended for trial by the Advisory Medical and Sanitary Committee for Tropical Africa, a circular had already been sent out as early as April, 1921, to all stations asking Medical Officers to give it a trial under their own direct personal supervision.

Very few cases were admitted to the isolation camps after the receipt by Medical Officers of this circular, and of six cases treated with one death, careful notes were taken in one case only which came under my observation while acting as Medical Officer of Health at Kampala.

A 3 per cent. solution of Potassium Permanganate was applied in the earlier papular stage all over the body; the salutary effect was most marked, the temperature dropped from 103° to normal and never again rose over 100°, though the case went through the stages of vesiculation and pustulation as usual.

Though it was not a "confluent" case, the eruption was fairly extensive.

The patient suffered very little discomfort, and expressed profuse gratitude for the treatment, which is rare in natives.

The attendants, who had had a great deal of experience in nursing smallpox cases, were much impressed with the result. The application was repeated daily. There was practically no scarring.

VACCINATION.

152,191 Vaccinations have been performed during the year.

In the Buganda Kingdom universal vaccination of the Baganda by districts has not proceeded as rapidly as it should have done. 22,132 vaccinations only have been performed, as against 27,453 last year.

There has been some trouble occasionally about the bringing of people for vaccination. The reluctance of the people to present themselves may be partly due to an apathetic attitude engendered by the absence of Smallpox, but has been partly due to the exhibition of the results of series of "bad arms" referred to in last year's report.

This year again some batches again showed very fierce re-action. Dr. Neilson, who has been in charge for the last six months, attributes the fierce re-action to sepsis, or to the efforts made (chiefly by Malakites—an anti-medicine sect) to prevent the vaccination taking effect.

The Assistant Bacteriologist (Miss Martin) assures me that the lymph was thoroughly tested for extraneous organisms before being issued, so that the sepsis cannot be attributed to contamination in the Laboratory.

On the whole, I think it may safely be said that the vaccine produced at the Laboratory has been satisfactory in its action and in its results, as far as figures returned by native vaccinators for the latter can be trusted.

Of the 152,191 vaccinations performed, the results of 101,705 were noted and of these :

78.68	per cent	are returned	as	successful.
8.14	,,	,,	,,	modified.
13.17	,,	,,	,,	failed.

15 cases of Dysentery, 10 of which were of the amœbic variety, occurred at the Kampala Gaol. Three of the cases were the residue of the outbreak in December, 1921; the remainder occurred sporadically throughout the year. The origin of the latter was not traced.

Bacillary Dysentery was somewhat serious at Lira, and was probably due to the failure of the protected water supply during dry weather.

Enteric Fever.

Vide Special Report, Appendix II.

Leprosy.

In Bunyoro, the lepers, formerly segregated in several small camps, have now been concentrated in seven camps. These are mostly self-supporting, but some of them are supplied with food by the local native chiefs, and a small sum has been granted by the Medical Department for buildings. These camps have been visited by the District Medical Officer, who reports favourably on their organisation, but no special treatment has yet been given.

Treatment by intravenous injections of Tartic emetic has been tried in a few cases elsewhere with apparently excellent results, and it is intended to give this treatment a trial on a larger scale during 1922.

Cerebro-Spinal Meningitis.

No serious epidemic has occurred, but sporadic cases have been reported from Kampala, Toro and Soroti.

GENERAL SANITATION.

Water Supply.

Kampala.—At the Labour Camp two springs have been intercepted by sub-soil porous "tile" pipes, and the water thus collected brought to the surface by pipes so as to avoid dipping.

The Geological Department have made an exhaustive survey in the environs of Kampala in the hope of obtaining an artesian supply for the town, but have met with no success.

Entebbe.—The Labour Camp at Entebbe is provided with a tank to which water is carried to give the labourers a supply of good water on the spot.

Masonry Drainage.

The increase in cost of labour and materials has seriously curtailed the progress on this work at Kampala, and only about 1,280 feet have been laid down.

SEWAGE DISPOSAL.

At the Labour Camps at Kampala and Entebbe, deep pit latrines have been established, provided with concrete slabs and fitted with iron hinged lids. These lids have not proved satisfactory, as they easily become bent.

At Bombo Military Lines similar latrines have been made with an additional number of smoke buckets to keep out flies. These, under good supervision, are working very satisfactorily, and the absence of flies and offensive odour is a marked feature.

REFUSE DISPOSAL.

Galvanized iron sanitary portable dustbins have been provided for all Officials quarters in Entebbe and Kampala.

LABOUR CAMPS.

An organised scheme for the control of these camps has been started, which should result in far-reaching benefit to the public health of the Protectorate.

Formerly, under conditions of "Kasanvu labour," that is, paid compulsory labour for Government purposes, the men employed had to make their own arrangements for board and lodging when brought in from a distance to work each month.

In consequence, these men have been usually underfed and often accommodated under the most insanitary conditions, to the detriment of the men themselves, of the tasks on which they were employed, and of the general public health.

The new organisation provides for each Government Station :—

(1) A reserved portion of land for a labour camp.
(2) Well laid out lines of huts in number sufficient to prevent overcrowding.
(3) A responsible headman in charge.
(4) A Dispensary and Hospital Ward, with a trained Native Hospital Assistant in charge (so far at Kampala only).
(5) Sanitary latrines.
(6) An adequate supply of good water accessible to the inmates.
(7) A regular supply of fuel for cooking purposes, etc.
(8) A Sanitary Staff to clean the camp and smear all the huts weekly with cow-dung.
(9) Incinerators for camp refuse.

Besides other arrangements made to increase the food supply, an attempt has been made to induce green-food-eating labourers to acquire a taste for a dry ration, consisting of mealie meal, beans, ground nuts and salt in dietetic proportions.

HOSPITAL ACCOMMODATION.

Except for the erection of a barbed wire fence and a few galvanized iron outhouses at Entebbe, no progress has been made in the establishment of Isolation Hospitals.

The lack of proper accommodation for the infectious sick was acutely felt in Entebbe while the plague was at its height.

RECOMMENDATIONS FOR FUTURE WORK.

Urgently required are :—

1. The building of adequate permanent Isolation Hospitals at Kampala and Entebbe.
2. The extension of the Kampala Swamp subsoil drainage.
3. The extension of Masonry Drainage System in Kampala.
4. Pipe-borne water supply for Kampala and Jinja.
5. Manufacture of Plague prophylactic at the Entebbe Laboratory.
6. Intensive rat destruction wherever the black rat is prevalent and wherever any other species is abnormally prolific.
7. Rat proofing of food stores.

C. J. BAKER,
Principal Sanitation Officer,
Uganda Protectorate.

Rats in Uganda and their relation to Plague.

There are three species of rats which I have found to be infected with plague in the Protectorate which for the sake of brevity I will refer to as A, B and C.

B and C probably include several sub-species, the differentiation between which is not apparent, except to the expert, and the nomenclature given to the specimens sent for identification is varied. The names below were obtained from the Natural History Museum, South Kensington, per Dr. Andrew Balfour; from the Pretoria Museum, where specimens were sent in 1917; and from Mr. W. N. van Someren, who has been collecting mammals in Kenya for Rothschild. They are as follows :—

Rat A.—The "black rat," native name "Nsolima."
Rattus Rattus *Nat. Hist. Mus.*

Rat B.—A local house rat, native (Lusoga) name "Mvugu."
Rattus (Mastomys) Effectus. *Nat. Hist. Mus.*
Rattus Coucha Panya }
Rattus Coucha Ugandae (?) } *W. N. van S.*
Epimys (*Sp.*) *Pret. Mus.*

Rat C.—Local Field Rat (? vole) native name "Mese."
Arvicanthis Abyssinicus Rubescens. *Nat. Hist. Mus.*
A. A. Nubilans }
A. A. Centrosus } *W. N. van S.*
Dasymys Orthos *Pret. Mus.*

Rat A I believe to be imported within the last ten years and it possibly came originally from the Coast via the railway; it is generally found in the thatch of houses but sometimes in burrows in walls made by Rat B.

Rat B lives either in the thatch or holes in mud walls.

Rat C burrows in the open but frequents houses in seach of food.

Rat A is larger and more active than either B or C.

Unfortunately very few notes have been made in the past as to the comparative role played by various species in the dissemination of plague in the Protectorate, except in 1917 when I sent some skins for identification to South Africa.

In 1914 I found Rat B dead of plague at Jinja.

In 1917 at Entebbe both Rat B and Rat C were present in great numbers and were often found dead of plague, while Rat A (which I then noticed for the first time) was very scarce and not actually seen dead of plague. In 1921 Rat A was the common house rat in Entebbe.

In 1920 and 1921 at Kampala Rat B was very rare. Rat C comprised 95% of the rats caught. I at first failed to note which species were infected but noticed latterly that the infected rats were always Rat A.

During the Kamuli epidemic I noticed that in the centre of the infected area about 99% of the rats killed in the thatch of houses were Rat A. The local natives said that this species was unknown to them five years ago and attributed its invasion to the erection of ginneries. It is curious that within a mile or so of the cotton ginneries the houses contained twice as many rats as elsewhere. Anyhow there is no doubt that the spread of rats and plague has some connection with the cotton industry. The recent slump in the cotton trade caused the natives to store their cotton in their houses for months in the hope of obtaining a rise in the market price and this cotton provided a great attraction to rats and possibly a food conducive to prolific breeding. If the thatch was pulled off an average of about 35 per hut was killed: one house yielded 65! I noticed that at the periphery of the plague area rats were less plentiful and Rat A and Rat B occupied houses in fairly equal numbers and beyond this again there were no Rat A and no plague.

I then considered it important to map out as far as possible the limit of invasion of Rat A and the following data have been collected.

The invasion of the black rat presumably began at the Lake Ports, Mjanji, Jinja, Kampala, Entebbe and Bukakata.

From Mjanji it has spread Northwards to Mbale and as far as the river Namatala a few miles North of that town, also North-West to Bunyuli, and into Wakoli's country in Busoga.

From Jinja it has spread North-East to Iganga and a few miles to the North-East of that town, and along the railway to the Kamuli district which includes Namasagali Port, whence it has been conveyed to at least two of the ports in Lake Kioga, *viz.*, Lale and Bugondo. From Jinja it has also passed over the Nile by the Jinja-Bugungu ferry into Kiagwe in Buganda where it has reached a point 30 miles North of the Lake at Nakifuma.

From Kampala Port it has spread to the town and vicinity: specimens have been brought to me from places within a radius of seven miles from the township but no further than this, though an exhaustive search would probably show the range to be wider.

From Entebbe Port it has spread over the peninsula and also the adjacent mainland.

Bukakata is the probable port entry of the black rats found at Masaka. I am uncertain so far as to the extent of this particular invasion as the only rats I have seen were in Masaka township, but there was a native rumour that it had been seen ten miles to the West.

An accurate survey, at repeated intervals, of the limit of advance of the black rats from the last three named ports is much needed because of the populous areas inland which may be involved.

Rat skins have also been sent to me from Kigezi which appear to be very like the *Rattus Rattus*; if they are the same, the channel of invasion is obscure.

Toro, Bunyoro and the rest of the Northern Province are, I believe, free of the black rat.

In Teso, the only two places in which I found Rat A were the two ports on Lake Kioga, Lale and Bugondo; elsewhere in this district rats of any kind were conspicuous by their scarcity. This is most notable because here, as in North Bukedi, plague had been endemic up till 1917, since which date I am convinced from enquiries made on the spot there has been no plague and that deaths reported to be due to plague were in reality due to Cerebro-Spinal Meningitis. Great difficulty was experienced in parts of this district in obtaining any house rats for identification; a few specimens only of Rat B and C were seen.

In Lango, however, I found Rat B swarming in the houses everyhere, and a request for rats to be brought to me at Lira produced 6,400 in 24 hours. Here I found no Rat A, but rat and human plague has broken out during 1921 in more than one place, the infected rats being Rat B.

There is no doubt that for many years prior to 1918, plague was endemic throughout Kavirondo, Bukedi, Teso and parts of Busoga and Lango.

About 45 years ago an army of Baganda who attempted to raid the Bakedi were so heavily attacked by plague that they abandoned the enterprise and took the infection back to Buganda, which resulted in a widespread epidemic in Buganda at that time.

In 1907 I visited Mbale and did post-mortem examinations on two men who had died of pneumonic plague and confirmed the diagnosis by microscope.

In 1908 a severe epidemic at Budaka practically wiped out the native inhabitants surrounding the Roman Catholic Mission at that place in North Bukedi.

When Prof. Simpson passed through this country in 1913, plague was prevalent all over the endemic area as aforesaid.

It is significant that in Teso and North Bukedi, part of what was formerly an endemic area, the rats have now been reduced to a minimum. The reason for this is not apparent; the famine of 1917-1918 may have had some influence, but against that is the fact that the epidemic at Budaka, where rats must have been then numerous, took place at the end of the far more disastrous famine of 1907-08.

It would appear that where rats are from any cause reduced in numbers plague will die out, or at any rate lie dormant, for want of a suitable medium, *i.e.*, the rat flea.

If the highly susceptible black rat invades such an area it will rapidly multiply, as it will have no competition to contend with, and eventually pick up the dormant infection from the surviving local rats and thus start epizootic plague.

This I believe to be the reason for the reappearance of plague early in 1920 in South Bukedi, which from 1917 till that date had enjoyed a rest from the disease.

On the other hand it would appear that the invasion of a few infected black rats into any plague-free district where the local species are superabundant will set going Epizootic Plague among the latter.

This will account for the epidemics which took place at Jinja in 1914 and Kampala in 1916 when infected black rats were brought by shipping from Kisumu where plague was prevalent at that time.

Lango is the only part of the endemic area where plague has reappeared owing to excessive increase among the local species of rats without any influence on the part of the black rat.

If there were no rats there would be no Plague, but it is admittedly impossible to exterminate rats entirely, though if they are materially reduced in numbers in areas where plague already exists or is threatened, severe epidemics should be prevented.

The invasion of the susceptible black rat into fresh areas should be looked upon as a forewarning that plague is almost bound to follow and measures taken accordingly.

For instance, if intensive rat destruction is carried out at the Lake Kioga Ports, plague should be prevented from obtaining a foothold.

Hence the importance of a thorough knowledge of the distribution of the various species: also acquaintance with the habits of the species to be destroyed is of importance, because it would be as futile to attack Rat A in the open as it would be to attack Rat C in the thatch.

I have therefore recently obtained sanction to engage the services of Mr. W. N. van Someren, who has recently been doing similar work in Kenya Colony, to make a rat survey in this Protectorate during the first half of 1922.

He will collect skins for identification, as well as the fleas from each species, and make blood and spleen smears from every rat caught.

Meanwhile throughout the Eastern Province war is being waged on the rats, especially house rats.

According to native returns 2,139,471 were killed in 1921: the accuracy of these returns is of course open to criticism, but when at Kamuli I checked the tally at intervals and found no exaggeration, so that I think the total is worth recording. Dr. Vassallo also personally checked very large counts in Bukedi.

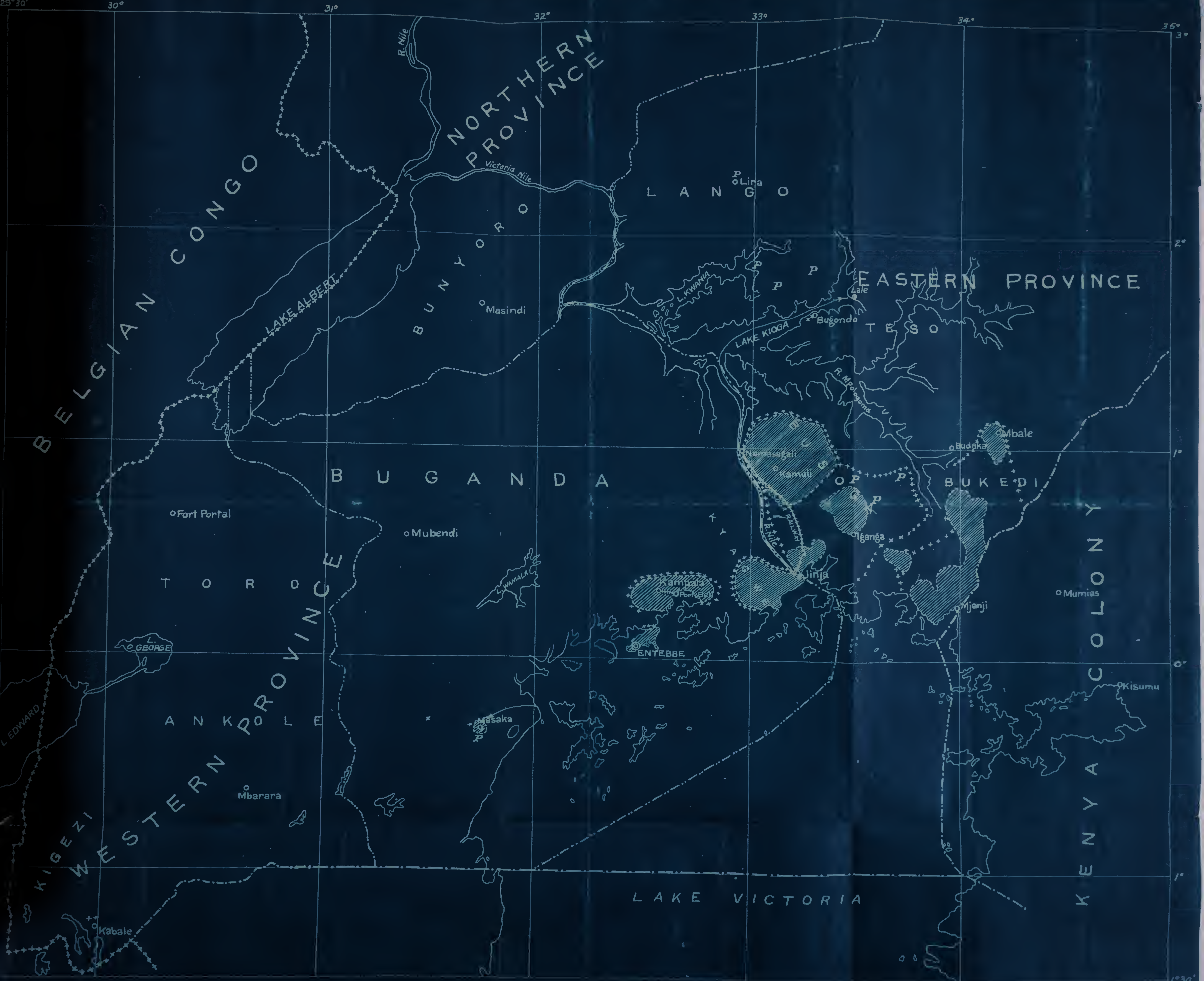
I regret that it has not been possible to have all the tails brought in and counted by a European, which Dr. Paterson, C.S.O., of Kenya informs me has been done in his most successful campaign in Kavirondo, but I hope this will be done in 1922, at any rate in the Eastern Province.

In the Buganda Kingdom, where the social and administrative conditions are totally different, it has not been possible to stimulate the chiefs and people to undertake intensive rat destruction and, even where plague has occurred, the results of these rat hunts have been disappointing.

In Kampala, a permanent gang of men has been employed in persistent rat destruction, and I consider the low incidence of plague in the town during 1921 to be due to their efforts.

UGANDA PROTECTORATE.

Scale 1:1.500.000.



Reference

Limit of Black Rat shewn thus :- ++

" " Plague " "

At Entebbe and Jinja, de-thatching native houses has been practised with good results.

At Entebbe and Masaka, poison (Barium Carbonate) was also employed, and at Entebbe, by December, house rats had been reduced to an average of two rats per hut, but 4% of these still showed *B. pestis.*

The disadvantage of the de-thatching method is the expense to the householder, especially in the neighbourhood of towns where fresh grass has to be carried for miles.

Besides being a danger to the community as a plague carrier the black rat has become a serious menace to the public welfare on account of the depredations they have made in the native grain stores.

In parts of Bukedi and Busoga, the natives complained that half the stocks in their granaries had been destroyed by these pests.

These granaries are easily accessible to rats, being generally composed of wicker work supported on rocks and timber a foot or two above the ground.

In order to discourage rats on native premises, as an anti-plague measure and to protect the native food supply, I have devised a scheme for rat-proofing these granaries by raising them on poles, which are fitted with rat guards at a height of 3½ feet from the ground.

I had a few samples of these guards made locally from galvanised sheet iron in the form of a disc perforated to receive the pole and shaped to resemble a lamp shade, the outer and lower edge of the discs being 9 inches horizontally from the pole.

I had the same idea carried out in pottery, and though these earthenware guards have the disadvantage of being fragile, if fitted closely to the pole they serve the purpose.

I considered that if metal guards were made by machinery they might be turned out by the hundred thousand at a price low enough to enable the native peasant to purchase them, but the Crown Agents for the Colonies, to whom specifications were sent, can quote no price less than 10d. per guard delivered in London, which with freight added, would be more than the peasant could afford.

I have hopes of arranging for the purchase of these guards to be fitted to the communal granaries erected in the Eastern Province as a precaution against famine.

In the attached Sketch Map of the Protectorate, the "hatched" areas shew roughly where plague has been prevalent during 1921: isolated outbreaks as in Lango are marked by P.P.P.

The invasion of the black rat as far as is known is marked roughly by the line of small crosses.

Isolated small crosses shew where black rats have been seen by me beyond the line of advance, also (in Kigezi) whence skins, probably of the black rat, have been sent.

It will be noted that the areas covered by black rat and plague comprise a comparatively small portion of the Protectorate.

C. J. BAKER,

Principal Sanitation Officer.

TABLE IV.

Summary of Routine Sanitary Work done during the Year.

1. NAME OF TOWN.—ENTEBBE.

——	Approximate area.	Number of proclaimed open spaces.
1919 ...	12 square miles ...	13
1920 ...	12 square miles ...	13
1921 ...	12 square miles ...	13

2. POPULATION.

——	NUMBER OF ASIATICS.		NUMBER OF NATIVES.		NUMBER OF EUROPEANS.		TOTAL.
	Males.	Females.	Males.	Females.	Males.	Females.	
1919 ...	237	97	2,653	1,968	106	60	5,121
1920 ...	210	94	2,017	1,857	96	50	4,324
1921 ...	321	120	2,307	2,692	143	86	5,669

3. HOUSING.

——	Number occupied by Europeans.	Number occupied by Natives and Asiatics.
Number of Houses:—		
1919 ...	89	446
1920 ...	79	450
1921 ...	80	457

Number of Huts:—	
1919	1,269
1920	1,267
1921	1,350

4. MOSQUITO PROTECTION OF HOUSES.

	1919	1920	1921
Number of European houses wholly mosquito-protected ...	89	78	81
Number of European houses with mosquito room ...	21	21	21.
Number rendered during the year wholly mosquito-protected ...	—	—	—
Number rendered during the year partially mosquito-protected ...	3	7	—

5. ERECTION OF NEW BUILDINGS DURING THE YEAR.

	1919	1920	1921
Number of public buildings erected with sanction as to site, construction, and relation to other buildings	—	1	3
Number of houses erected with sanction as to site, construction and relation to other buildings	—	3	4
Number of huts erected with sanction as to site, construction, and relation to other buildings	—	—	12
Number of houses built without sanction	—	—	—
Number of huts built without sanction	—	—	—

ACTION TAKEN.

——	NUMBER OF PROSECUTIONS.		NUMBER DEMOLISHED.	
	Huts.	Houses.	Huts.	Houses.
1919 ...	—	—	—	—
1920 ...	—	—	—	—
1921 ...	—	—	—	2

6. MARKETS.

—	Total Number.	Number paved and drained.	Number unpaved.
1919	3	1	2
1920	3	1	2
1921	3	1	2

7. SLAUGHTER-HOUSES.

—	Total Number.	Number paved and drained.	Number unpaved.
1919	1	1	—
1920	1	1	—
1921	1	1	—

8. LATRINES.

—	For Males.		For Females.	
	Number.	Number of seats.	Number.	Number of seats.
Number of Public Latrines :—				
1919	13	39	—	—
1920	5	15	—	—
1921	5	24	—	—
Number of new Public Latrines erected during the year :—				
1919	—	—	—	—
1920	2	12	—	—
1921	1	6	—	—
Number of Public Latrines repaired during the year :—				
1919	—	—	—	—
1920	—	—	—	—
1921	—	—	—	—
Number of Public Latrines demolished during the year :—				
1919	1	3	—	—
1920	2	6	—	—
1921	1	3	—	—

	1919	1920	1921
Number of Private Latrines	324	330	299
Average number of pails of nightsoil removed daily ...	430	450	410
Average number of soiled pails removed and clean pails substituted	50	51	44
Number of nightsoil men employed to clean latrines and remove excreta	24	24	24
Number of cesspools	1,383	1,370	917
Number of cesspools cleansed	—	—	—
Number of new cesspools constructed during the year ...	987	980	453
Number of old cesspools abolished	434	500	453
Number of cesspools oiled regularly by Department ...	—	—	—

9. REMOVAL OF REFUSE.

	1919	1920	1921
Number of dustbins	10	15	208
Number of carts at work daily to remove refuse from streets ..	10	9	9
Amount of refuse removed daily	30	27	27
Number of carts at work daily to remove refuse from yards and premises	Included in above		
Amount of refuse removed daily from yards and premises ...			
Number of men employed for removing refuse ...	10	16	18

10. MODE OF DISPOSAL OF EXCRETA, REFUSE, AND OFFAL.

—	Daily average number of pails of Excreta.			Daily average number of cartloads of Refuse.			Daily average number of cartloads of Slaughter House and Market Offal.		
	1919	1920	1921	1919	1920	1921	1919	1920	1921
Buried or trenched ...	430	400	410	30	27	27	1	1	1
Burnt	—	—	—	—	—	—	—	—	—
Thrown into sea ...	—	--	—	—	—	—	—	—	—
Otherwise dealt with ...	—	—	—	—	—	—	—	—	—

11. AVERAGE DAILY NUMBER OF CARTLOADS OF TIN CANS, BOTTLES, BROKEN CROCKERY AND OTHER INCOMBUSTIBLE MATERIAL REMOVED FROM HOUSES, HUTS, AND COMPOUNDS.

1919	1920	1921
$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{4}$

12. WATER SUPPLY.

Nature of Water Supply.	1919	1920	1921
PIPE-BORNE WATER :—			
Source (river, lake, or spring) :—			
Number of linear yards	—	—	—
Number of stand-pipes along roads	—	—	—
Number of stand-pipes in compounds and houses ...	—	—	—
WELLS :—			
Public :—			
Number	16	20	16
Number with pumps protected against surface water and mosquito-protected	—	—	—
Private :—			
Number	1	1	1
Number protected against surface water and mosquito-protected	—	—	—
TANKS :—			
Public :—			
Number underground	—	—	—
Number mosquito-protected and served by pumps ...	—	—	—
Number above ground	—	—	—
Number mosquito-protected	—	—	—
Number of 400 gallons capacity or less ..	—	—	—
Number above 400 gallons	—	—	—
Private :—			
Number underground	3	3	3
Number mosquito-protected	3	3	3
Number above ground	194	160	139
Number mosquito-protected	1	160	132
Number of 400 gallons capacity or less ...	2	2	6
Number above 400 gallons	192	158	126
Nature of tank :—			
Wood	—	—	—
Iron	159	58	18
Concrete	33	102	114
Barrels :—			
Number	25	20	70
Number mosquito-protected	10	12	15

13. DRAINAGE.

Nature of Drainage.	Public.	Private.
Masonry drains :—		
Linear yards of masonry drains :—		
1919	2,161	612
1920	2,161	612
1921	2,161	612
Linear yards reconstructed during the year :—		
1919	—	
1920	—	
1921	—	—
Linear yards repaired during the year :—		
1919	—	—
1920	—	—
1921	—	—

13. DRAINAGE—*continued.*

Nature of Drainage.	Public.	Private.
Masonry Drains—*contd.*		
Linear yards of new drains constructed during the year :—		
1919	—	—
1920	—	—
1921	—	—
Earth drains or ditches :		
Number of linear yards of ditches cleaned :—		
1919	No record	No record
1920	,,	,,
1921	,,	,,
Number of linear yards of ditches dug and graded :—		
1919	No record	No record
1920	,	,,
1921	,,	,,
Average frequency of clearing ditches of grass :—		
1919	Monthly	Monthly
1920	,,	,,
1921	,,	,,

14. CLEARANCE OF UNDERGROWTH, LONG GRASS AND JUNGLE.

	1919	1920	1921
Number of square yards of weeds, grass, and vegetation cut and removed	Approximately 3 sq. miles.		
Average frequency of clearance of rank vegetation on same area	Twice monthly		

15. EXCAVATIONS AND LOW-LYING LAND.

	1919	1920	1921
Number of pools and excavations	4	5	6
Number of excavations filled up	2	4	4
Amount of low-lying and marsh land raised and drained ...	—	—	No record
Number of pools, marshes, streams, &c., fish-stocked ...	—	—	—
Number of cubic yards of material used for filling up pools and excavations	No record	No record	No record
Number of persons fined for making new excavations ...	—	—	—
Average number of men daily employed in filling up pools, &c.	10	7	9

16. OILING.

	1919	1920	1921
Number of drains oiled	—	5	—
Number of pools and excavations oiled	—	7	—
Number of tanks and barrels oiled	2	2	3
Average number of men daily employed for oiling drains, pools, and watertanks or barrels	—	7	—

17. INSPECTIONS AND PROSECUTIONS.

	1919	1920	1921
Number of inspectors employed	1	1	2
Number of houses inspected	443	400	457
Number of houses where larvæ were found	52	15	7
Number of notices served to remove conditions causing the breeding of larvæ	34	5	7
Number of persons fined for having mosquito larvæ on premises	—	—	—
Number of notices served to remove insanitary conditions on premises	23	3	12
Number of persons fined for not removing insanitary conditions after notice	—	—	—
Number of soda and ærated water factories inspected ...	1	1	1

P. T. HANNINGTON,
District Commissioner.

Table IV.

Summary of Routine Sanitary Work done during the Year.

1. Name of Town.—JINJA.

—	Approximate area.	Number of proclaimed open spaces.
1919 ...	2,560 acres, approx. 4 square miles ..	5 Tennis Courts.
1920 ...	do do ...	6 ,, ,,
1921 ...	do do	7 ,, ,, 2 Sports Club Grounds. 1 Square.

2. Population.

—	Number of Natives.		Number of Europeans.		Total.
	Males.	Females.	Males.	Females.	
1919	1,025	945	29	9	2,008
1920	1,315	1,040	36	16	2,407
1921	2,016	1,403	42	13	3,474

3. Housing.

—	Number occupied by Europeans.	Number occupied by Natives and Asiatics.
Number of Houses:—		
1919 ...	50	310
1920 ...	59	318
1921 ...	64	321

Number of Huts:—	
1919	549 approx.
1920	700 ,,
1921	830 ,,

4. Mosquito-Protection of Houses.

	1919	1920	1921
Number of European houses wholly mosquito-protected ...	31	33	35
Number of European houses with mosquito room ...	—	—	—
Number rendered during the year wholly mosquito-protected ...	—	—	—
Number rendered during the year partially mosquito-protected ...	—	—	—

5. Erection of New Buildings during the Year.

	1919	1920	1921
Number of public buildings erected with sanction as to site, construction, and relation to other buildings	—	—	—
Number of houses erected with sanction as to site, construction and relation to other buildings	3	17	8
Number of huts erected with sanction as to site, construction, and relation to other buildings	40	60	130
Number of houses built without sanction	—	—	—
Number of huts built without sanction	—	—	—

Action Taken.

—	Number of Prosecutions.		Number Demolished.	
	Huts.	Houses.	Huts.	Houses.
1919 ..	—	—	438	—
1920 ...	—	—	7	4
1921 ...	—	—	48	—

6. MARKETS.

—	Total Number.	Number paved and drained.	Number unpaved.
1919	1	—	1
1920	1	1	—
1921	1	1	—

7. SLAUGHTER-HOUSES.

—	Total Number.	Number paved and drained.	Number unpaved.
1919	1	1	—
1920	1	1	—
1921	1	1	—

8. LATRINES.

—	For Males.		For Females.	
	Number.	Number of seats.	Number.	Number of seats.
Number of Public Latrines :—				
1919	43	—	—	—
1920	46	—	—	—
1921	47	—	—	—
Number of new Public Latrines erected during the year :—				
1919	18	—	—	—
1920	3	—	—	—
1921	2	—	—	—
Number of Public Latrines repaired during the year :—				
1919	—	—	—	—
1920	3	—	—	—
1921	—	—	—	—
Number of Public Latrines demolished during the year:—				
1919	—	—	—	—
1920	—	—	—	—
1921	1	—	—	—

	1919	1920	1921
Number of Private Latrines	235	312	325
Average number of pails of nightsoil removed daily ...	483	560	614
Average number of soiled pails removed and clean pails substituted	—	—	—
Number of nightsoil men employed to clean latrines and remove excreta	22	25	33
Number of cesspools	—	—	—
Number of cesspools cleansed	—	—	—
Number of new cesspools constructed during the year ...	—	—	29
Number of old cesspools abolished	2	—	—
Number of cesspools oiled regularly by Department ...	—	—	—

9. REMOVAL OF REFUSE.

	1919	1920	1921
Number of dustbins	1	11	11
Number of carts at work daily to remove refuse from streets ...	—	—	—
Amount of refuse removed daily	—	—	—
Number of carts at work daily to remove refuse from yards and premises	4	6	7
Amount of refuse removed daily from yards and premises ...	30	50	65
Number of men employed for removing refuse ...	27	29	30

10. MODE OF DISPOSAL OF EXCRETA, REFUSE, AND OFFAL.

—	Daily average number of pails of Excreta.			Daily average number of cartloads of Refuse.			Daily average number of cartloads of Slaughter House and Market Offal.		
	1919	1920	1921	1919	1920	1921	1919	1920	1921
Buried or trenched ...	450	545	630	24	30	37	1	1	1
Burnt	—	—	—	—	—	—	—	—	—
Thrown into sea ...	—	—	—	—	—	—	—	—	—
Otherwise dealt with ...	—	—	—	—	—	—	—	—	—

11. AVERAGE DAILY NUMBER OF CARTLOADS OF TIN CANS, BOTTLES, BROKEN CROCKERY AND OTHER INCOMBUSTIBLE MATERIAL REMOVED FROM HOUSES, HUTS, AND COMPOUNDS.

1919	1920	1921
2	3	5

12. WATER SUPPLY.

Nature of Water Supply.	1919	1920	1921
PIPE-BORNE WATER :—			
Source (river, lake, or spring) :—			
Number of linear yards	—	—	—
Number of stand-pipes along roads	—	—	—
Number of stand-pipes in compounds and houses ...	—	—	—
WELLS :—			
Public :—			
Number	—	—	—
Number with pumps protected against surface water and mosquito-protected	—	—	—
Private :—			
Number	—	—	—
Number protected against surface water and mosquito-protected	—	—	—
TANKS :—			
Public :—			
Number underground	—	—	—
Number mosquito-protected and served by pumps ...	—	—	—
Number above ground	—	—	—
Number mosquito-protected	—	—	—
Number of 400 gallons capacity or less ..	—	—	—
Number above 400 gallons	—	—	—
Private :—			
Number underground	—	—	—
Number mosquito-protected	—	—	—
Number above ground	44	46	50
Number mosquito-protected	44	46	50
Number of 400 gallons capacity or less ...	42	44	47
Number above 400 gallons	2	2	3
Nature of tank :—			
Wood	—	—	—
Iron	33	35	37
Concrete	11	11	13
Barrels :—			
Number	—	—	—
Number mosquito-protected	—	—	—

13. DRAINAGE.

Nature of Drainage.	Public.	Private.
Masonry drains :—		
Linear yards of masonry drains :—		
1919	—	—
1920	300	500
1921	350	700
Linear yards reconstructed during the year :—		
1919	—	400
1920	—	100
1921	50	200
Linear yards repaired during the year :—		
1919	—	—
1920	24	—
1921	34	—

13. DRAINAGE—*continued.*

Nature of Drainage.	Public.	Private.
Masonry Drains—*contd.*		
Linear yards of new drains constructed during the year :—		
1919	—	—
1920	—	—
1921	—	—
Earth drains or ditches :		
Number of linear yards of ditches cleaned :—		
1919	1,600 yards including the new Township.	
1920		
1921		
Number of linear yards of ditches dug and graded :—		
1919		
1920		
1921		
Average frequency of clearing ditches of grass :—		
1919	Every month	
1920		
1921		

14. CLEARANCE OF UNDERGROWTH, LONG GRASS AND JUNGLE.

	1919	1920	1921
Number of square yards of weeds, grass, and vegetation cut and removed	160,000 continuous.		
Average frequency of clearance of rank vegetation on same area			

15. EXCAVATIONS AND LOW-LYING LAND.

	1919	1920	1921
Number of pools and excavations	—	—	—
Number of excavations filled up	—	—	—
Amount of low-lying and marsh land raised and drained ...	—	—	
Number of pools, marshes, streams, &c., fish-stocked ...	—	—	—
Number of cubic yards of material used for filling up pools and excavations	—	—	—
Number of persons fined for making new excavations ...	—	—	—
Average number of men daily employed in filling up pools, &c.	—	—	—

16. OILING.

	1919	1920	1921
Number of drains oiled	18	20	27
Number of pools and excavations oiled	—	—	—
Number of tanks and barrels oiled	—	—	—
Average number of men daily employed for oiling drains, pools, and watertanks or barrels	7	7	7

17. INSPECTIONS AND PROSECUTIONS.

	1919	1920	1921
Number of inspectors employed	1	1	2 (one for 4 months)
Number of houses inspected	284	299	318
Number of houses where larvæ were found	18	20	20
Number of notices served to remove conditions causing the breeding of larvæ	25	45	35
Number of persons fined for having mosquito larvæ on premises	—	—	—
Number of notices served to remove insanitary conditions on premises	90	85	60
Number of persons fined for not removing insanitary conditions after notice	—	—	—
Number of soda and ærated water factories inspected ...	—	—	—

C. F. H. HENRY,
President Township Authority, Jinja.

TABLE IV.

Summary of Routine Sanitary Work done during the Year.

1. NAME OF TOWN.—KAMPALA.

—	Approximate area.	Number of proclaimed open spaces.
1919 ...	322,000 acres	8
1920 ...	322,000 „	8
1921 ...	322,000 „	8

2. POPULATION.

—	NUMBER OF NATIVES.		NUMBER OF EUROPEANS.		NUMBER OF ASIATICS.		TOTAL.
	Males.	Females.	Males.	Females.	Males.	Females.	
1919 ...	1,435	471	117	32	756	391	3,202
1920 ...	1,452	342	140	67	656	328	2,995
1921 ...	1,320	304	161	82	642	312	2,821

3. HOUSING.

—	Number occupied by Europeans.	Number occupied by Natives.	Number occupied by Asiatics.
Number of Houses:—			
1919 ...	125	456	388
1920 ...	130	476	399
1921 ...	137	483	404

Number of Huts:—	
1919	1,341
1920	1,257
1921	1,073

4. MOSQUITO PROTECTION OF HOUSES.

	1919	1920	1921
Number of European houses wholly mosquito-protected ...	88	89	95
Number of European houses with mosquito room ...	14	19	19
Number rendered during the year wholly mosquito-protected ...	1	1	6
Number rendered during the year partially mosquito-protected ...	2	5	9

5. ERECTION OF NEW BUILDINGS DURING THE YEAR.

	1919	1920	1921
Number of public buildings erected with sanction as to site, construction, and relation to other buildings	3	7	—
Number of houses erected with sanction as to site, construction and relation to other buildings	29	16	9
Number of huts erected with sanction as to site, construction, and relation to other buildings	165	91	—
Number of houses built without sanction	—	—	1
Number of huts built without sanction	35	10	33

ACTION TAKEN.

—	NUMBER OF PROSECUTIONS.		NUMBER DEMOLISHED.	
	Huts.	Houses.	Huts.	Houses.
1919 ..	—	—	56	4
1920 ...	—	—	185	—
1921 ...	—	—	227	—

6. MARKETS.

—	Total Number.	Number paved and drained.	Number unpaved.
1919	3	—	3
1920	3	—	2
1921	3	—	2

7. SLAUGHTER-HOUSES.

—	Total Number.	Number paved and drained.	Number unpaved.
1919	1	1	—
1920	1	1	—
1921	1	1	—

8. LATRINES.

—	For Males.		For Females.	
	Number.	Number of seats.	Number.	Number of seats.
Number of Public Latrines :—				
1919	13	56	2	14
1920	15	68	2	14
1921	16	74	2	14
Number of new Public Latrines erected during the year :—				
1919	—	—	—	—
1920	2	12	—	—
1921	2	16	—	—
Number of Public Latrines repaired during the year :—				
1919	1	6	1	6
1920	1	12	—	—
1921	—	—	—	—
Number of Public Latrines demolished during the year :—				
1919	—	—	—	—
1920	—	—	—	—
1921	3	12	—	—

	1919	1920	1921
Number of Private Latrines	725	766	795
Average number of pails of nightsoil removed daily ...	850	848	878
Average number of soiled pails removed and clean pails substituted	–	—	—
Number of nightsoil men employed to clean latrines and remove excreta	34	42	24
Number of cesspools	43	50	69
Number of cesspools cleansed	—	—	—
Number of new cesspools constructed during the year ...	—	—	—
Number of old cesspools abolished	—	—	—
Number of cesspools oiled regularly by Department ...	—	—	—

9. REMOVAL OF REFUSE.

	1919	1920	1921
Number of dustbins	No record		124
Number of carts at work daily to remove refuse from streets ..	15	16	16
Amount of refuse removed daily	65	74	74
Number of carts at work daily to remove refuse from yards and premises	15	16	16
Amount of refuse removed daily from yards and premises ..	30	35	48
Number of men employed for removing refuse ...	55	55	83

10. MODE OF DISPOSAL OF EXCRETA, REFUSE, AND OFFAL.

—	Daily average number of pails of Excreta.			Daily average number of cartloads of Refuse.			Daily average number of cartloads of Slaughter House and Market Offal.		
	1919	1920	1921	1919	1920	1921	1919	1920	1921
Buried or trenched ...	935	890	883	—	—	—	—	—	—
Burnt	—	—	—	35	—	—	2	2	2
Thrown into sea ...	—	—	—	—	—	—	—	—	—
Otherwise dealt with :— Filling up old excavation in swamp area	—	—	—	30	70	70	—	—	—

11. AVERAGE DAILY NUMBER OF CARTLOADS OF TIN CANS, BOTTLES, BROKEN CROCKERY AND OTHER INCOMBUSTIBLE MATERIAL REMOVED FROM HOUSES, HUTS, AND COMPOUNDS.

1919	1920	1921
2	2	2

12. WATER SUPPLY.

Nature of Water Supply.	1919	1920	1921
PIPE-BORNE WATER :—			
Source (river, lake, or spring) :—			
Number of linear yards	—	—	—
Number of stand-pipes along roads	—	—	—
Number of stand-pipes in compounds and houses ...	—	—	—
WELLS :—			
Public :—			
Number	6	6	6
Number with pumps protected against surface water and mosquito-protected	6	6	6
Private :—			
Number	2	1	1
Number protected against surface water and mosquito-protected	1	1	1
TANKS :—			
Public :—			
Number underground	—	—	—
Number mosquito-protected and served by pumps ...	—	—	—
Number above ground	—	—	—
Number mosquito-protected	—	—	—
Number of 400 gallons capacity or less ..	—	—	—
Number above 400 gallons	—	—	—
Private :—			
Number underground	10	10	10
Number mosquito-protected	10	10	10
Number above ground	239	246	263
Number mosquito-protected	233	240	263
Number of 400 gallons capacity or less ...	136	141	148
Number above 400 gallons	113	115	115
Nature of tank :—			
Wood	—	—	—
Iron	211	218	218
Concrete	38	38	45
Barrels :—			
Number	14	12	6
Number mosquito-protected	4	2	—

13. DRAINAGE.

Nature of Drainage.	Public.	Private.
Masonry drains :—		
Linear yards of masonry drains :—		
1919	5,609	3,524
1920	6,025	No record
1921	6,452	"
Linear yards reconstructed during the year :—		
1919	710	"
1920	—	"
1921	—	"
Linear yards repaired during the year :—		
1919	No record	75
1920	600	No record
1921	—	"

13. DRAINAGE—*continued.*

Nature of Drainage.	Public.	Private.
Masonry Drains—*contd.*		
Linear yards of new drains constructed during the year :		
1919	836	450
1920	416	No record
1921	427	,,
Earth drains or ditches :		
Number of linear yards of ditches cleaned :—		
1919	6,524	No record
1920	6,974	,,
1921	7,346	,,
Number of linear yards of ditches dug and graded :—		
1919	3,951	No record
1920	450	,,
1921	670	,,
Average frequency of clearing ditches of grass :—		
1919	6	No record
1920	6	,,
1921	6	,,

14. CLEARANCE OF UNDERGROWTH, LONG GRASS AND JUNGLE.

	1919	1920	1921
Number of square yards of weeds, grass, and vegetation cut and removed	863,542	645,333	670,000
Average frequency of clearance of rank vegetation on same area	7	7	7

15. EXCAVATIONS AND LOW-LYING LAND.

	1919	1920	1921
Number of pools and excavations	No record	No record	No record
Number of excavations filled up	,,	,,	,,
Amount of low-lying and marsh land raised and drained	,,	,,	17½ acres
Number of pools, marshes, streams, &c., fish-stocked	—	—	—
Number of cubic yards of material used for filling up pools and excavations	No record	No record	1,712 cub.
Number of persons fined for making new excavations	,,	,,	—
Average number of men daily employed in filling up pools, &c.	,,	,,	130

16. OILING.

	1919	1920	1921
Number of drains oiled	—	—	—
Number of pools and excavations oiled	—	—	—
Number of tanks and barrels oiled	—	—	—
Average number of men daily employed for oiling drains, pools, and watertanks or barrels	—	—	—

17. INSPECTIONS AND PROSECUTIONS.

	1919	1920	1921
Number of inspectors employed	8	6	4
Number of houses inspected	1,164	1,750	2,172
Number of houses where larvæ were found	738	308	286
Number of notices served to remove conditions causing the breeding of larvæ	32	27	22
Number of persons fined for having mosquito larvæ on premises	3	—	—
Number of notices served to remove insanitary conditions on premises	65	122	181
Number of persons fined for not removing insanitary conditions after notice	17	11	18
Number of soda and ærated water factories inspected	2	2	3

GEO. McKENZIE,
Executive Officer, Township Authority.

APPENDIX No. I.

Report on Blackwater Fever in Uganda for 1921.

1. The number of cases during 1921 was 62, with 15 deaths. Of these, 46 cases were reported by Government Medical Officers with 12 deaths and 16 by the Church Missionary Society's doctors at Namirembe with 3 deaths.

2. The following table shows the number of cases, deaths and case death-rates during the past 18 years:—

Year.	Cases.	Deaths.	Case death-rate.
			%
1904	10	2	20
1905	14	3	21·4
1906	41	4	9·8
1907	10	2	20
1908	13	2	15·4
1909	21	6	28·6
1910	26	6	23·1
1911	18	3	16·6
1912	45	9	20
1913	58	12	20·7
1914	82	21	25·6
1915	65	18	27·7
1916	46	10	21·7
1917	49	8	16·5
1918	40	7	17·5
1919	83	18	21·7
1920	56	7	12·5
1921	62	15	24·19

3. *Locality and Seasonal Variation.*—The following table shows the Stations where the cases and deaths occurred and the monthly variation:—

STATION.	January.	February.	March.	April.	May.	June	July.	August.	September.	October.	November.	December.	1921 Total		1920 Total	
													Cases	Deaths	Cases	Deaths
BUGANDA KINGDOM.																
Entebbe	...	...	1	...	1	...	1	...	...	...	...	...	3	1	4	1
Kampala	...	1	1	1	...	3	1	1	1	4	2	3	18	4	12	...
Kampala, C.M.S.	1	...	1	1	3	3	2	4	...	1	...	...	16	3	7	2
Bombo	...	...	...	...	...	1	...	...	...	...	1	...	2	1	...	...
Mubendi	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Masaka	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
WESTERN PROVINCE.																
Mbarara	...		...	...	...	...	1	...	...	...	...	...	1	1	...	...
Toro	...	...	...	...	...	...	...	..	...	...	...	...	...	...	...	...
Kabale	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
NORTHERN PROVINCE.																
Hoima	..	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...
Masindi	...	...	...	...	...	...	1	...	...	...	...	...	1	...	1	...
Butiaba	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
Gulu	...	...	...	...	...	...	...	...	...	...	...	..	...	...	1	1
Kitgum	...	1	...	...	...	...	...	...	...	...	...	...	1	...	2	...
Arua	...	...	...	...	...	...	...	...	..	...	...	...	...	...	...	...
EASTERN PROVINCE.																
Jinja	...	1	..	...	1	...	...	1	...	3	...	...	6	4	20	2
Namasagali	1	...	1	...	...	...	...	...	...	...	...	1	3	...	4	...
Mbale	...	...	...	...	2	1	...	..	3	...	...	...	6	1	2	1
Soroti	...	...	...	...	...	1	1	...	...	1	...	...	3	...	...	...
Lira	...	...	...	...	...	...	...	...	1	...	...	...	1	...	1	...
TOTAL 1921	2	3	5	2	7	9	7	6	5	9	3	4	62	15	...	...
TOTAL 1920	3	1	4	...	5	7	13	9	6	4	1	3	...	...	56	7

It will be seen from the above that 39 cases occurred within a radius of 25 miles from Kampala, both Entebbe and Bombo being within this radius. Of the 34 Kampala cases, 31 occurred in the township.

4. *Race incidence, and case incidence for each Province.*—The cases were distributed as follows:—

	Europeans.				Asiatics.				Natives.			
	Cases.		Deaths.		Cases.		Deaths.		Cases.		Deaths.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Officials ...	2	1	1	0	6	1	0	0	0	0	0	0
Non-Officials ...	8	1	1	1	35	7	10	2	1	0	0	0
	10	2	2	1	41	8	10	2	1	0	0	0
	12		3		49		12		1		0	

The native case, that of a Muganda at the C.M.S. Hospital at Namirembe, is unusual and most interesting; it was an undoubted case in a child aged 2½ years.

Under "Officials" in the above table are two cases occurring among the wives of officials.

The Census return for 1921 enables us to obtain the exact incidence of cases among the different races in the different Provinces, and the following table shows this:—

Province.	Europeans.		%	Asiatics.		%
	Population.	No. of cases.		Population.	No. of cases.	
Buganda Kingdom	802	8	·9	2,297	30	1·4
Western Province	108	1	1·	198	0	0·
Northern ,, ...	111	0	0·	158	3	1·9
Eastern ,, ...	248	3	1·2	2,951	16	5·
TOTALS ...	1,269	12	·94	5,604	49	·87

It is thus seen that the Asiatic in the Bazaar at Kampala, where 24 out of the 30 cases in the Buganda Kingdom occurred, is far more liable to Blackwater Fever than his fellow in the Eastern Province, while the European in the Eastern Province is more liable than his fellow on the West of the Nile.

5. *Sex and Age.*—The sex is shown under 4 above, being 52 males with 12 deaths and 10 females with 3 deaths.

The ages of the patients were as follows:—

	Under 10.	10-20.	20-30.	30-40.	40-50.	Over 50.	Total.
Cases	6	1	25	19	8	2	61
Deaths	0	0	6	5	3	1	15

The age of one case (Church Missionary Society) was not recorded.

6. *Nationality.*—There were 12 Europeans, 49 Asiatics and 1 Native; *see* 4 above.

The Asiatics include:—

	Goans.	Indians.	Cingalese.	Armenians.	Total.
Males	6	32	2	1	41
Females	2	6	0	0	8
	8	38	2	1	49

7. *Occupation.*—The occupation would not appear to have much influence. The 62 cases were made up as follows:—

Traders	17	Motor Driver	1
Clerks and Accountants . .	9	Public Works Department Foreman	1
Carpenters	4	Stock Inspector	1
Engineers	3	Blacksmith	1
Cotton Buyers	2	Boat Steward	1
Planters	3	Architects	2
Tailors	2	Child	1
No occupation	1	Not recorded	12
Prisoner	1		

Wives are included under the occupation of their husbands.

8. *Length of Residence* (*a*) in Tropics and (*b*) in the place where the attack came on.

(*a*) In Tropics.

Race.	Under 1 year.	1—5	5—10	10—15	15—20	Over 20	Not recorded.	Total.
Europeans	—	5	5	—	—	—	2	12
Asiatics	3	22	7	8	1	3	5	49
TOTAL ...	3	27	12	8	1	3	7	61

(*b*) The figures recorded under (*b*) do not appear to have any bearing on the incidence of the attack, the time varying from 1 day to 17 years.

Amongst the 62 cases, the attack came on in 53 while in residence in a township, in 5 while in residence in an outlying district, in 2 while on safari; and in 2 the exact locality is unknown.

9. *Result.*—15 of the cases ended fatally; the rest are recorded as cured but 3 of the 62 names occur twice and one of these must be considered as a relapse as in this case the second attack occurred within three weeks of the commencement of the first attack.

10. *Predisposing Causes.*—

Malaria, or debility following it, is given in 39 cases.
Previous Blackwater Fever ,, ,, 3 ,,
General debility ,, ,, 4 ,,
Predisposing cause not stated ,, ,, 14 ,,
Predisposing cause unknown ,, ,, 2 ,,

11. *Exciting Causes.*—An exciting cause (or causes) is generally recorded but beyond the fact that previous malaria, a chill, over-exertion or exposure, or a combination of these is generally given, the records do not convey much information. It may be noted that quinine alone is given as the exciting cause in 12 cases only, *i.e.*, in 2 of the 46 Government cases and 10 of the 16 C.M.S. cases.

The details given are as follows:—

Over-exertion ...	9	Malaria and quinine ...	1
,, after B. W. F. ...	1	Quinine ...	12
,, after Malaria ...	5	Chill ...	4
,, and quinine ..	3	Chill and exposure ...	1
,, and chill ..	4	Chill, exposure and quinine ...	2
,, chill and exposure	1	Exposure ...	1
,, and chill after malaria	1	Nil ..	5
Malaria ...	3	Unknown ...	7
,, and chill ...	2		

12. *Previous Malaria.*—In all 46 Government cases previous malaria is reported, while in the 16 C.M.S. cases previous malaria is reported as having occurred in 8 cases, as "not known" in 6, and in two nothing is stated. As a rule "frequent" attacks are recorded, and generally an attack "recently." In 31 cases it is recorded that the malaria had been inadequately treated. The patient was suffering from malaria at the time when the hæmoglobinuria came on in 39 cases. It is stated that there was no malaria at the time in 9, while in 14 cases this question is not answered.

Enlarged spleen is recorded as follows :—

	Present.	Absent.	Not recorded.
Government cases	34	6	6
C. M. S. ,,	6	4	6

The presence or absence of signs of chronic malaria, *e.g.*, anæmia is recorded in too few cases to be of any use. Frequent exposure to malaria infection is recorded as follows :—

	Exposed.	Not exposed.	Not stated.
Government cases ...	33	9	4
C. M. S. ,, ...	3	0	13

13. Under "Occurrence of Insect Fauna," in most cases anopheles are reported as prevalent.

14. The seasonal conditions are recorded under four headings, thus :—

Dry season	Before rains	Rains	After rains.
10	1	40	10

while in one case this is returned as "unknown."

15. *Quinine Habits.*—Quinine as a prophylactic was taken as follows :—

Regularly	Irregularly	Not taken
11	37	5

while in 9 of the C.M.S. cases this is not recorded. "Regularly" generally means 5 grains daily, while "irregularly" generally means that the patient takes 5 or 10 grains a day when he feels "off colour."

The amount of quinine taken in the last dose prior to the onset of hæmoglobinuria is recorded as follows :—

Nil	3 grs.	5 grs.	10 grs.	15 grs.	20 grs.	25 grs. (in 5 doses of 5 grs.)	Not recorded
9	2	18	13	1	1	1	17

While the length of time between this last dose and the commencement of the hæmoglobinuria is given thus :—

Same day.	Previous day.	2 days.	3 days.	5 days.	10 days.	21 days.	Not recorded.
16	15	1	1	1	2	1	25

16. *Blood Examination.*—This was done in 37 of the Government cases and in 4 of the Church Missionary Society's cases with the result that malaria parasites were found as follows :—

	Before attack	During	After	Negative
Government cases	11	8	4	14
C.M.S. ,, ...	1	1	0	2

but the returns under this head are very incomplete, and must necessarily often be so.

17. *Previous attacks of Blackwater Fever.*—This is recorded as having occurred in 21 of the 62 cases as follows :—

Number of previous attacks		1	2	3	4
Number of cases	Europeans	3	—	—	—
	Asiatics	13	4	—	1

The last previous attack was either in 1919, 1920 or 1921 except 1 in 1918, 1 in 1915, 2 in 1913 and 1 in 1911. Of the 21 patients who had had previous attacks 6 died. The 15 deaths were made up as follows :—

1 had had 4 previous attacks
2 ,, ,, 2 ,, ,, 1 in 1916 and 1919, and 1 in ? and 1919
3 ,, ,, 1 ,, ,, 1 in 1913, 1 in 1919, and 1 in 1920, while in 8 the first attack proved fatal and in 1 the previous history was unknown.

Blackwater Fever is recorded as having occurred in the same house in 5 cases and in the same neighbourhood in 17 cases.

18. *Albuminuria* is recorded as having occurred during the attack in 24 of the 46 Government cases and in 1 of the 16 C.M.S. cases and as persisting after the attack in 1 case.

19. *Other Complications.*—

Jaundice is stated as having occurred in 35 cases, Relapses of hæmoglobinuria in 7 ; (it recurred 3 times in 1 case), Suppression of urine in 7.

In the 15 fatal cases :—

Jaundice occurred	in	13
Relapses	,, ,,	2
Suppression	,, ,,	4

20. *Duration of the Hæmoglobinuria.*—This was as follows :—

For all cases.

Under 1 day, ...	4	4 days, ...	6
1 ,, ...	8	5 ,, ...	3
1½ days ...	4	6 ,, ...	1
2 ,, ...	14	7 ,, ..	1
3 ,, ...	7	Not recorded	14

In 4 of the cases with relapses the duration was as follows :—

Cases	Original attack	1st Relapse	2nd Relapse
1	½ day	1 day	—
1	1½ days	1 ,,	—
1	3 ,,	2 days	—
1	3 ,,	2 ,,	1 day

For the fatal cases

1	1½ days	2 days	3 days	4 days	5 days	Not recorded.
1	1	2	2	4	2	3

In the 2 fatal cases with relapses, the duration in the original attack in one case was 4 days but the duration in the relapse was not stated, whilst in the other case the duration was not stated at all.

21. *Treatment.*—In the C. M. S. cases the treatment in not definitely stated, but Hearsey's mixture is given in all cases as a routine.

Of the 46 Government cases, 39 were given treatment as follows :—Quinine injections during the attack in 19, Hearsey's mixture in 13, Quinine plus Hearsey in 1, Pituitary extract in 4, Saline infusions only in 2, no treatment other than fluid diet was given in 2, and the treatment was not recorded in 5 cases.

In the 12 fatal Government cases :— Quinine injections were given in 6, Pituitary extract in 2, Hearsey in 1, nil in 1, and in 2 the treatment given is not recorded.

In the above only the main drug is given, salines, strychnine and digitalis, iron, etc., were used in most cases.

From these results the treatment by quinine injections comes out worst, but last year this method came out best, with no fatal case.

22. A special Blackwater Fever case register has now been prepared and each case will be recorded therein as it occurs; this will show the gaps in any report at a glance and so enable the missing particulars to be obtained at once.

My thanks are due to Dr. A. R. Cook, O.B.E., for so kindly giving me particulars of his cases.

C. A. WIGGINS,
Principal Medical Officer.

APPENDIX No. II.

THE HON'BLE THE CHIEF SECRETARY,
ENTEBBE.

Annual Report on Enteric Fever for 1921.

I have the honour to inform you that during 1921, 10 cases of Typhoid Fever were recorded with 1 death, and 3 cases of Paratyphoid with no deaths.

These occurred at the following stations :—

		Cases.	*Deaths.*
TYPHOID.	Kampala	6 ...	—
	Jinja	2 ...	—
	Mbale	2 ...	1
	TOTAL ...	10 ...	1
PARATYPHOID.	Entebbe	2 ..	—
	Jinja	1 ...	—
	TOTAL ...	3	—

The diagnoses were made clinically and only two were confirmed by Laboratory tests.

2. A circular was sent to all stations on December 2nd, 1921, in accordance with the instructions of the Secretary of State, that in every case a Laboratory report was to be made, so that the 1922 figures will be of more value. The Mission doctors were also asked to send specimens of the blood of their cases to the Government Laboratory for examination and report.

C. A. WIGGINS,
Principal Medical Officer.

APPENDIX No. III.

Annual Report on Venereal Disease Measures, Uganda, for 1921,

BY

Major G. J. KEANE, D.S.O. (R.A.M.C., R.), M.D., M.B., CH.B., D.P.H., D.T.M.,
Specialist Officer, Venereal Diseases.

SUMMARY.

January.

Dr. Webb arrived for duty and assisted in the general re-fitting and re-building of Mulago which had been begun in 1920. The construction of latrines, incinerators, native attendants' quarters, cook-house, new laboratory building, medium room and animal house was either commenced or continued; erection of pumps and laying down of piping for water supply was begun.

February.

Dispensary treatment of sick begun, building and fittings continued, new house for Superintendent begun, native staff engaged. Hoima visited with the Hon'ble the Principal Medical Officer to discuss the possibility of commencing measures in Bunyoro.

Total attendances of sick	59
In-Patients remaining on February 28th	1

March.

Continuation of building and equipping, and treatment of sick.

Attendances	536
In-Patients on March 31st	9

April.

Discussion with the Provincial Commissioner, Buganda Kingdom, and the Native Ministers of the formation of a ring of Auxiliary Centres round Kampala on the circumference of a circle of 18 miles radius, with posts roughly 18 miles apart. Co-operation of Native Government offered freely. Arranged that all indigenous material and labour were to be supplied by Native Government, and European fittings and fixtures by the Uganda Government. Posts suggested were Wakiso, Mukono, Kasengati, Mbale and Mityana. An Indian Compounder arrived for duty. Mr. Smout, European Superintendent, arrived for duty. Dr. Davies posted for duty 1st April, 1921.

Attendances	1,497
In-Patients on April 30th	39

May.

Those buildings for which the Medical Department were responsible were largely completed but the Public Works Department continued building new Dispensary and Medical Officers' houses. General plan of Auxiliary Centres drawn up. Building of Mbale Auxiliary Centre commenced.

Attendances	2,460
In-Patients on May 31st	44

June.

Building of Mityana aud Kasangati Auxiliary Centres commenced. Revision of Native Law arranged.

Attendances	4,476
In-Patients on June 30th	52

JULY.

Building of Mukono Centre commenced. Touring of all Gombololas within ready reach of Kampala undertaken with the District Commissioner, Mengo, and propaganda work performed. Dr. Lamont arrived.

Attendances	5,818
In-Patients on July 31st	58

AUGUST.

Propaganda work continued. Nagalama Mission (Roman Catholic), 40 miles distant, visited with the District Commissioner, Mengo, in connection with request from the Mission for erection of Auxiliary Centre near by.

Attendances	5,347
In-Patients on August 31st	68

SEPTEMBER.

Miss Stringer, Nursing Sister, arrived for duty. Supervision of erection of Mbale, Kasangati, Mukono and Mityana maintained

Attendances	4,389
In-Patients on September 30th	53

OCTOBER.

Proposals for legislation to exclude boys over 18 years of age from attending day-schools, as evidence was forthcoming that such boys were a source of spread of venereal diseases and often attended these schools merely for the purpose of avoiding Tax and Labour obligations. Proposals from White Fathers' Mission, Toro, to undertake treatment of venereal disease sick, subject to grant of drugs and other facilities from Government. The question of grants of drugs to and other facilities for treatment of venereal diseases by all voluntary hospitals and dispensaries on the lines of similar procedure by Ministry of Health in England discussed with the Hon'ble the Principal Medical Officer, Dr. Cook and Dr. Connolly, and a general scheme of action drawn up.

Attendances	3,668
In-patients on October 31st	77

NOVEMBER.

Visit from Provincial Commissioner, Northern Province; further pressure for institution of venereal diseases measures in Bunyoro; attempt made to commence buildings there which was eventually abandoned. Publication and wide-spread circulation of a pamphlet in the vernacular by Dr. A. R. Cook, O.B.E., with the signature of the Hon'ble the Principal Medical Officer, and the Specialist Officer, Venereal Diseases, attached. This pamphlet endeavours to bring home to the natives the importance of the treatment and prevention of spread of venereal diseases for the future of their race and urges them to assist in securing the attendance of those infected. New female ward and new dispensary opened; these were the first permanent hospital buildings on Mulago.

Attendances	4,677
In-patients on November 30th	85

DECEMBER.

Pressure of building maintained at Auxiliary Centres. Mityana centre visited and inspected by His Excellency the Acting Governor, and by the Hon'ble the Principal Medical Officer. Dr. Lamont retired from duty. Request from Provincial Luwalo Inspector for erection of Auxiliary Centres in Buyaga (Mubendi District) with offer to supply the buildings.

Attendances	3,816
In-patients on December 31st	92

Note.—No Annual Report was submitted for the year 1920. I returned from leave about the latter part of September, 1920. October, November and December were mainly occupied in recruiting labour, clearing, repairs to old buildings, commencing of new buildings, investigation of sources of water supply, completion of Medical Officers' houses, and survey and extension of the boundaries of the Mulago Hospital site. Arrangements were undertaken for a formal lease of the land, demarcated by the new boundaries, to the Uganda Government from the Native Government. This lease has not yet been finally concluded. The Hon'ble the Principal Medical Officer was informed that there appeared little likelihood of serious work being undertaken until March, 1921, owing to the backward state of the hospital site, buildings, fittings and equipment. Strong representations were made to the Public Works Department regarding the unsatisfactory position in the matter of buildings and the delay likely to ensue in resumption of this work.

B.—General Review of Work done.

1. During the first three months of the year Dr. Webb and myself were mainly concerned in building and equipment, and generally in re-setting in motion the machinery for attracting the attendance of sick.

2. During the second quarter of the year the producton of sick was further stimulated by vigorous propaganda work at every chief's headquarters within a radius of 18 miles of Kampala. In this connection it became clear that patients living 18 miles away could not be expected to perform the journey twice weekly or even once weekly and that most of the patients sent from a distance would default unless offered bed, bedding and food here. Our total bed accommodation at this time was 50 at most, a number utterly inadequate for dealing with the sick population living over 18 miles away. Extension of accommodation to an adequate proportion would have involved an expenditure that was unlikely to be sanctioned. The setting up of Auxiliary Centres was therefore discussed and eventually carried out. Considerable increase in attendance of out-patients and in-patients now occurred.

3. Towards the latter end of the year we had for a short time a full staff, *viz.*, one lady Medical Officer and three male Medical Officers, a Nursing Sister and a European Superintendent. We became properly accommodated in a dispensary, which was a well-lighted permanent building in which it was possible to work in comfort and cleanliness. One properly and permanently built ward was opened and allocated to female patients. In-patients and out-patients reached a maximum. Although our staff was up to full strength, a great strain fell on all concerned in dealing with the outside centre work and visits to chiefs, and at the same time maintaining the proper care and attention to the out-patients and in-patients at Mulago.

A reference to the time-table of Appendix I. will show the effort that has (Appendix I). been required from the staff by Mulago duties alone. The day's work commenced at 8 a.m. and continued with an interval, sometimes only of 20 minutes, until 4 p.m. After this there was a night round to be done occupying a Medical Officer for not less than an hour. It now often occupies nearly two hours. Further there have been not infrequent night emergency calls. One or other of the Medical Officers has frequently been away, either on outside duties or through sickness, thereby throwing extra duties on the others. By the latter end of the year the morning round of the wards occupied one Medical Officer for two hours and the general ward work gave promise of absorbing the whole time services of one Medical Officer. The present system is unsatisfactory as it leads to the ward-round being hurried through, and to lack of attention to essential details in the out-patient clinic owing to the absence of the Medical Officer on ward duty. The brunt of operation work has fallen on myself. In connection with development of the hospital, correspondence, indents, vouchers, queries from Audit and Treasury Departments have grown rapidly. These duties, together with those of the supervision and maintenance not only of financial matters but of medical and surgical equipment, are more than sufficient occupation for one Medical Officer and I am myself carrying them out at present. I find it most difficult to get any time to supervise the daily work of the clinic which is what I most want to do. The extreme pressure under which all European members of the staff have worked during the latter part of the year gives cause for concern. The highest number of intravenous injections administered in one day was 160. The mornings have mainly been occupied with attending the daily out-patients. The afternoons were taken up with operation work.

Cases for operation are always waiting, and it has been impossible to keep abreast with our waiting list. The majority of these are stricture cases, to which further reference will be made later.

4. The assumption of duty by the Nursing Sister promised to overcome grave difficulties in connection with the in-patient department administration and also with the conduct of the clinic. Unfortunately after only about six weeks of duty, and before full taking over of ward duties, Miss Stringer fell sick and has not returned to duty.

5. November saw the realization of one goal in native medical administration in the opening of the first Auxiliary Centre at Mityana under the sole and independent charge of a Native Clinical Assistant. This native sees records and treats all sick with the assistance of native attendants, of whom one is a female. He performs intravenous injections of Arsphenamine and of Mercury regularly and without supervision. A most careful inspection of his records and cases shows most satisfactory progress. Should the progress at Mityana be maintained, one may hope for enormous extension of native medical work on modest lines, Medical Officers merely exercising supervision

C. Detailed Review.

Note.—Throughout this report the term "Arsphenamine" is used to mean Salvarsan substitutes of all kinds.

(Appendix II.) I. *Receipts.*—An expression of native opinion in regard to payment for drugs is shown in Appendix II. In view of these representations the Hon'ble the Principal Medical Officer agreed to our not pressing for payment. The total amount received between April and December was just short of £200. This sum mainly accrued from payments for Arsphenamine, for which a charge of six shillings per dose was recovered from those who could pay. We have been driven into the exhibition of a large number of free issues of Arsphenamine for the following reasons:—

(*a*) Most of our patients were poor and absolutely destitute.

(*b*) Many of them lived in hospital. The cost of their maintenance there was at least seven shillings and sixpence per week. Our accommodation was never more than 100 beds and we were in a constant state of overflow. We had therefore to choose between maintaining sick indefinitely in the wards under mercurial treatment or healing and discharging them rapidly under Arsphenamine. Under the urgent pressure for beds we adopted the latter procedure.

(*c*) In regard to out-patients, we thought it well to curtail similarly the duration of attendance of many of the out-patients by Arsphenamine dosage, merely getting what payment we could.

(*d*) There are grave practical difficulties in obtaining payment from patients, the majority of whom are attending under compulsion.

II. *In-patients.*

1. The number of in-patients remaining in at the end of each month is shown at the beginning of this report. The figure does not represent the maximum number accommodated during each month. For instance, the highest number accommodated during December, 1921, was 120. It is seen that the number rises steadily month by month. Should this increase continue in the next year an *impasse* must arise. While at home Venereal Disease clinics, the ratio between in and out-patents is perhaps only one to one hundred or even one to four hundred, a very different ratio prevails here; it is as great as one to thirty. The most satisfactory form of anti-Venereal Disease treatment here is in-patient treatment and the highest level of cure is approached amongst them because they are under complete observation and control.

2. The reason of the high proportion is that large numbers of sick come from distances of over 20 miles, either of their own accord or at the instance of chiefs. On arrival they are destitute and have nowhere where they can go; some are carried, some walk, arriving in a state of exhaustion. Try as we will there is no course open to us but to take them in. Payment for food or upkeep they are unable to make.

3. It is perhaps satisfactory, difficult as the financial side of the issue is, to reflect on the enormous boon that Government is extending through this institution to the native inhabitants by the maintenance of these sick. It appears that the entertainment of 100 sick in-patients, allowing for food, water, light, attendance and general upkeep, is only maintained at a cost of about £2,000 per annum, (£20 per bed per annum).

4. A partial remedy for this state of affairs is to be found in the establishment of auxiliary centres, as indicated later in this report. It is possible that, with the opening of the new light railway which passes close to this hill, the food costs may be reduced by half, by purchase up-country and delivery by rail. Further, maintenance of lighting and water will cost very much less on the installation of electric light and under a permanent pipe-water scheme.

5. A cost per bed of £20 per annum is modest when compared with any European Hospital. These vary in cost between £200 and £60 per bed per annum (*vide* "Hospitals Annual," Sir Henry Burdett, K.C.B., K.C.V.O.). Only one hospital in England is shown as costing £40. Dr. Cook's estimate of cost per annum per bed in Mengo Hospital, an old established hospital very economically run, is £17/5/0 (*vide* Appendix 3). A new hospital must be more expensive during its first few years of running.

III. *Results of Treatment.*

1. Appendix IV shows an exhaustive analysis by Dr. Webb of our case (Appendix IV) records with seemingly unsatisfactory results. The gist of Dr. Webb's paper is that our methods of anti-syphilitic treatment are not yet as efficient as they should be. We have to deal with treatment of (*a*) ante-natal cases, (*b*) gonorrhœa in all its forms, (*c*) venereal sores, and (*d*) syphilis in the primary, secondary and tertiary stages. Dr. Webb's adverse comments are confined to our results of the treatment of primary and secondary syphilis, which are but an important section of the work. The remedy he suggests is substitution of ten doses of Salvarsan substitute for the two doses that for the most part have been given.

2. The difficulty in carrying out this suggestion is the cost of the drug and the obligation on us, not very strictly observed it must be confessed, of endeavouring to recover the cost of the drug, *viz.*, six shillings per dose, from sufferers. It is for superior authority to determine whether Dr. Webb's recommendations shall be carried out. This matter is dealt with at the conclusion of this report.

3. The cost of efficient treatment of primary and secondary syphilis is approximately 30/- per person and the number of such persons at the Mulago Centre will approximately and probably be not less than 1,000 per annum. At the same time it is pointed out that (*a*) we are endeavouring in spite of the risks to increase mercurial dosage, taking all possible precautions against a repetition of the calamities of 1908, (*b*) positive blood results at the end of a course of treatment are by no means necessarily an indication of inefficient treatment. Our results in conditions other than syphilis, primary and secondary, seem to be eminently satisfactory. Of the total attendances of 36,000, primary and secondary syphilitics represent less than half.

4. The reasons for not exhibiting Arsphenamine in doses corresponding to those advocated by the Medical Research Committee were:—

(*a*) At times no supply of the drugs existed.

(*b*) Money was not available for buying the drug in sufficient quantity.

(*c*) Authority to issue the drug freely to natives without payment had not been obtained.

(*d*) We wished to ascertain whether Arsphenamine reacted with natives as does mercury, which is therapeutically efficient with them in doses of $\frac{1}{4}$ or $\frac{1}{5}$ of that given to Europeans. Had this been so, a great saving in Arsphenamine expenditure would have been possible and it was therefore necessary to decide this point conclusively.

IV.—*Defaulters in attendance—Clerical Work.*

1. The clerical part of this work is of very great importance in maintaining the regular attendance of sick. It is necessary to make a weekly scrutiny of clinical records and extract the names and addresses of defaulters in attendance. These are handed to an authorized representative of the Native Government who then visits defaulters in person and insists on their attending, or enquires into the genuineness of their reasons for non-attendance. As the number of patients increases, so also does the work of maintaining the defaulter list. Nevertheless it is seen that 70 per cent of our cases were maintained in attendance.

2. Again the notification system has fallen somewhat into abeyance, partly because we have not been able to deal with the mass of native notifications received, make immediate payment of notification fees, and write to the various chiefs reporting cases. Whole series of notifications remain unfiled and unseparated because of the pressure of clinical work.

3. It should be explained that one clerical room 16′×15′ contains the typist (native), the Goan clerk, and the European Superintendent. Until further buildings are available it is impossible to do justice to the clerical side of the work. In many hospitals it is possible to use the dispensary as an office in the afternoon. As we are often engaged with the morning sick in the clinic until after 2 p.m., and even after this there is often an afternoon attendance, this is not practicable here.

4. Further, it would not be difficult to arrange for a census of the population in the Gombololas (districts) in which we have worked provided we had adequate clerical staff and accommodation. We should then be able to report definitely whether this work is having any effect on the vital statistics or not. One of the most urgent of our needs is the building of a proper administrative block with at least two clerical rooms.

V. *Water.*

The difficulties in connection with the maintenance of the hospital and out-patient department owing to the absence of an efficient water supply have been very great. The present source of water supply is a stream at the foot of the hospital hill and about one mile away. The water is carried by head-transport in buckets. A great deal is spilt *en route.* One of the necessities for venereal patients is free ablution. This, under present conditions, cannot be allowed. At times we have even been prevented from carrying on intravenous injections by an unforeseen shortage of water. Constant complaints are received from the laundry-man of the ration apportioned to him. He has all the towels, hospital linen, sheets, counterpanes, surgeons' and dressers' coats, etc., to maintain. This he cannot do efficiently at present. The rise of in-patients latterly, combined with increase of tri-daily fomentations, operation work and cleansing of the ever-extending ward accommodation, has made the water-supply question a most acute one.

VI. *Light.*

The present illuminant consists of paraffin oil lamps. These provide an expensive and very inefficient hospital light. Constant petty thefts of oil and wicks occur and are difficult to prevent, causing grave discomfort to the sick. Good lighting at night is essential, not only to prevent the more serious sick injuring themselves at night when groping to find latrines, but also to maintain cleanliness. Urination and defæcation on hospital floors never occurs in a well-lighted ward. It will be understood that the use of the bed-pan and urine-bottle by helpless native patients in the dark is a matter of considerable difficulty. Moreover it is impossible for Medical Officers to check the presence and fulfilment of duties of the night orderlies in the absence of lights. Most of our emergency night work has been in cases of acute retention of urine, requiring immediate supra-pubic puncture of the bladder or catheterization The difficulty of finding the urethral track in a difficult case by means of a flickering oil light is considerable. 75% of the in-patients are accommodated in temporary grass-roofed buildings and one is constantly being called at night to deal with lamps flaring to the roof. It seems certain that a fire will occur in one of these temporary buildings with, I fear, great loss of life owing to the narrow exits and the bed-ridden and helpless condition of many of the sick.

VII. *Conservancy.*

Latrine arrangements consisted at first of deep pits 16 feet in depth. These were covered with a grass roof and provided with cement plates and trap-doors. In spite of every sanitary precaution, these pits became most offensive and bred hordes of flies. The pits were then filled in and an incinerator erected. In connection with this two cement latrine platforms each accommodating 10 persons, which are sloped and drained into a pit, have been built, also a chamber for maintaining dry fuel. The incineration process and latrine platforms have been a complete success Whatever other difficulties we have had to contend with owing to rapid rise in numbers of in-patient sick, the conservancy system has given us no trouble or concern. I understand that this is the first public institution in Uganda in which incineration has been practised successfully under civil conditions.

VIII. *Stricture, Retention and Extravasation of Urine.*

1. The high prevalence of stricture of the urethra in males, as a sequel of gonorrhœa, with consequent extravasation of urine and destruction of scrotal and perineal tissues, is a feature that has come especially into prominence during the past year.

2. The annual loss in life and complete permanent disablement from this cause alone must be considerable. Only a fraction of the sufferers seek relief at our hands, though this number is steadily increasing with the spread of the news of cures effected by European doctors. As many as six dilatations with or without chloroform, have been carried out in the course of one morning.

3. A certain mortality has been associated with these operations, largely because so many of the cases reach here in an almost dying condition with great distension of the bladder or after extravasation of urine and partial gangrene of the scrotum has set in.

4. The condition is invariably called "gonorrhœa" by the natives and is in no way distinguished by them from the acute gonorrhœa of adolescents, thus showing the extreme ignorance prevailing in the native mind in matters connected with venereal disease.

5. As many as 30% of all cases of gonorrhœa who attended were found on (Appendix XIII)
investigation to be suffering from stricture (*vide* Appendix XIII, Returns).

A reference to Appendix V shows the number of dilatations performed, and (Appendix V) (Appendix XIV)
to Appendix XIV the mortality.

IX. *Auxiliary Centres.*

1. The *raison d'etre* of these is referred to earlier in this report. With their successful establishment is bound up the future not only of anti-venereal disease work but generally that of the extension of native medical work, and thus in a large measure the introduction of hygiene, sanitation and health to the great bulk of the native population. It would seem that there is little possibility of an adequate supply of the type of Medical Officer essential for native work, one able to acquire quickly native dialects, sympathetic to and patient with the negro, highly qualified in special duty and unremitting and untiring in his work, nor, were they available, would the financial resources of the Protectorate admit of their employment.

2. Five centres have been planned, *viz.*, at Mityana, Mukono, Mbale, Kasangati and Wakiso; one is opened and working well (Mityana); another is all but finished (Mbale). The cost of the Mityana centre building to Government was £45. Its equipment cost £150. Its maintenance costs £135 per annum. The Mityana centre consists of temporary buildings entirely. These are to be replaced this year by permanent buildings. It is visited fortnightly by a Medical Officer from Mulago; severe cases are brought to Mulago by motor ambulance or motor van. The attendance at Mityana is now 45 daily and is gradually increasing. The Mbale centre is a solid and well-built permanent building; its construction was carried out entirely by Baganda under Baganda supervision, without European assistance other than such as the Provincial Commissioner and myself and other Medical Officers could afford. Its cost up to the end of the year to Government was approximately £150. I think it will be admitted to be the cheapest Government permanent building yet erected in Buganda.

X. *Salvarsan Substitutes* (Arsphenamine).

1. We commenced with a stock of 100 doses of N.A.B., 50 doses of Sulfarsenol and 16 doses of Neokharsivan. These with the exercise of great economy lasted until the latter part of April. From April until the end of August we were entirely without any Salvarsan substitute. This period was a crucial one as it was the time when high pressure was being exercised by the Administration amongst the native population to re-start the native attendance. The demand for these drugs by the native population was very keen and not less so was their disappointment when they found we had none.

2. The estimated total cost of Arsphenamine used by us was £233. Our total receipts, mainly accruing from Arsphenamine, were a little under £200. The greater part of this money was collected between September and December.

3. Regarding the relative value of the different preparations it is difficult to offer opinion on the short experience we have had of them, but it does seem that there is a great future for Sulfarsenol as a subcutaneous injection preparation. We have had brilliant results with it in the treatment of manifestation of congenital syphilis in young and especially in newly-born infants.

4. It would appear that none of the Salvarsan substitutes approach the efficiency and startling effect of the original Salvarsan. Thus in cases of yaws a certain cure could be promised with one dose of Salvarsan; four doses are necessary to effect a cure with the modern substitutes.

XI. *Legislation.*

1. *Pre-war Legislation.*—This consisted of Venereal Rules under the Dangerous Diseases Ordinance, the Township (Venereal) Rules, and the Native Law. This latter has been under revision by the Native Government during the greater part of the year, with a view to simplifying the leading enactments dealing with a scheme for notification; the house-owner is thereunder compelled to report any case of venereal disease known to him to the Gombolola Chief. This is not being carried out and the law in practise in this regard is really a dead letter. Whether this law can be turned to any account will better be seen when the revised version is again re-published and enforced, but the supervision of the notification system entails an amount of clerical work which cannot be dealt with by the existing staff. The main use of native law throughout the past year has been as a lever in compelling re-attendance of sick for completion of courses of treatment. In this respect we have found it of the greatest value. No legal proceedings of any kind have been taken under any of the legislative enactments. The threat of prosecution has been sufficient to secure continued attendance in the case of such defaulters as we could get into touch with. Any attempt at full enforcement of powers given to us under the various Ordinances would defeat our aims by rendering our work so unpopular as to prevent its being carried on.

2. I think it will be found that our percentages of defaulters will compare favourably with those of European venereal disease clinics. This reflects great credit on the Uganda Administration and on the Native Government. In Europe one may expect a certain degree of intelligent co-operation from the patients. Here, dealing with an illiterate, ignorant, prejudiced and sometimes hostile class of patient, the difficulties of securing a high level of attendance are very great.

3. One new Ordinance was drafted in connection with the appearance of a danger of competition on the part of certain business firms with the Medical Department for the attendance and treatment of native venereal disease sick. It seemed necessary to prevent extension of a class of trade which was clearly undesirable, but which nevertheless promised to be highly lucrative. Natives seem to be highly attracted by patent medicines of all kinds and think that the printed directions are authoritative statements of Europeans, hence the offer of a one-week certain cure for venereal disease would be eagerly bought. In drawing up the legislation the British law was closely followed.

4. Further legislation was proposed in connection with preventing males of over eighteen years of age, other than those recommended by the school authorities, from attending day-schools. It seems that this class of youth attend day schools with a view to avoiding obligations in connection with tax and labour and is a source of spread of venereal disease. The proposals for this legislation have not matured as yet.

5. A further proposal has arisen to withdraw the Dangerous Diseases Ordinance. It this connection a proposal for combining all venereal disease enactments into one law has been made. The matter is still under consideration.

XII. *Proposals for extension of scope of venereal disease measures by grant of facilities for venereal disease treatment to voluntary (Mission) hospitals.*

(Appendix VI) 1. Appendix VI shows a copy of a letter addressed to the Senior Medical Officer of the Church Missionary Society and to the Medical Officer of the Mill Hill (Roman Catholic) Mission. Favourable answers have been received from both Missions. It is admitted that a great deal of anti-venereal disease treatment is carried on at all the voluntary hospitals scattered throughout the country. It is also admitted that the treatment given is frequently inefficient. This arises partly from ignorance on the part of their medical staff as to what constitutes efficient treatment and partly from the prohibitive cost of many of the remedial agents, *e.g.*, Potassium Iodide, 30/- per lb., Salvarsan substitutes, 6/- to 7/- per dose.

2. Nevertheless the cost of these drugs is but a fraction of the whole cost of anti-venereal disease treatment. In considering the cost of extension of venereal disease measures in any area there arises first the question of buildings for in and out-patient treatment; then staff, dressings, water, wood, food supply and attendance; lastly comes the question of the special remedial measures. At a rough guess it is estimated that the drug supplies necessary for efficient treatment of venereal disease represent probably one-twelfth of the total expense involved.

The Missions have the buildings, equipment, beds and staff, but have not the drugs. I believe if they could be induced to enter into a scheme of grants from the Government, under safeguards which are readily devisable, the scope of these measures could be greatly increased.

I suggest that a judicious outlay of, say, £1,500 in this way would probably enable us to travel further than a corresponding expenditure of £10,000 by Government. Some of the Missions have asked for facilities for their staff to become instructed in the routine of intravenous injections. Through the courtesy of the Hon'ble the Principal Medical Officer these facilities have been granted, and some four lady missionaries have been trained in intravenous injection by us. I append outlines of the plan under which it is proposed that grants be offered.

The matter is still under consideration (Appendix VII).

XIII. *Female Attendances.*

I. Appendix VIII shows a graph illustrating the progress of the proportion of female attendances to the total attendance. The highest point is reached in August, after which a gradual decline ensues. Although the number of females infected may be reasonably expected to exceed the males, in the proportion that their numbers exceed the male population, the female patients were much fewer than the male. Their attendance was less constant and the results of treatment in them, as shown by clinical records, are correspondingly less satisfactory than in the male. Their daily attendance shows an average strength of 27% only of the total attendance, this notwithstanding the inclusion in the female figures of attendance of all children between the ages of 1-7 years. It was hoped that the arrival of a lady medical officer would stimulate the female attendance and lead to a large increase; this unhappily did not prove to be the case.

2. The greatest discrepancy is seen in the figures for female attendance for gonorrhœa. One reason given for this is that gonorrhœa appears to cause much less suffering in the native female; again, the female natives are more backward and ignorant generally than the male and often do not even recognize the condition of gonorrhœa as a disease. It seems certain that gonorrhœa occasions the average negro patient of either sex very much less suffering and discomfort than is the case in a European.

3. It is also to be remarked that negro women have many more domestic duties and ties than the men and it is much more difficult for them to devote three unbroken months or more to treatment; it would therefore seem specially desirable to devise intensive courses of mercurial and Salvarsan treatment for them. The difficulty again is one of Salvarsan cost and its recovery. This matter will be dealt with at the end of this report.

4. One is driven to the conclusion that many of the female infected are being shielded by their relatives, and probably also by the chiefs, from the beneficent effort of anti-venereal disease treatment. Compulsory examinations at the request of chiefs have resulted in a fair number of cases being introduced to treatment, but little or no reliance can be placed in this step as an efficient anti-venereal disease measure, as it seems probable that mainly fit persons may be brought or sent for examination and that the infected, by one means or another, contrive to avoid examination. It will thus be seen that during the year we have only touched on the fringe of one of the most difficult problems of anti-venereal disease work in Buganda. We may reasonably claim that our partial failure has been counter-balanced by the widespread educative effect of these measures. In December a slight rise of female attendances set in.

XIV. *Standard of Cure.*

1. It is clear that the standard of cure, that is, exactly what cure consists in, is of importance in arriving at conclusions as to the value of the results obtained, and it follows that results will vary inversely with the height of the standard adopted. A high level is necessary to satisfy the requirements of the standards of cure of the Ministry of Health in England; in this country this standard is not practicable of attainment and has not been attempted except in regard to syphilis in the primary and secondary stages.

Gonorrhœa.

2. The progress of patients is examined by means of the two-glass test performed at least once weekly. On the disappearance of threads from both glasses on two successive occasions the patient is discharged as cured.

Syphilis.

3. In primary and secondary syphilis we are not departing from the usual home standards as far as they are practicable of application. It will be seen that no cases are yet shown as cured. In tertiary syphilis, it is extremely difficult to induce the patients to continue attending for treatment after disappearance of the conditions that caused their attendance; we are therefore compelled to discharge the majority of tertiary syphilitics when active signs have disappeared. None of these, however, are described as cured.

It will be seen that the incomplete treatment at least renders the patient unlikely to infect others readily whilst he himself is immune from further infection. The small number of recorded cures is for the foregoing reasons explained. It might be thought that but little good was being done were low figures of cures stated without the explanation given.

XV. *Motor Ambulance.*

The purchase of a motor ambulance has been of the greatest benefit in making it possible to equip rapidly and maintain auxiliary centres, and render their administration and supervision by European staff a matter of ease.

XVI. *Propaganda.*

1. A very full and able paper was written by Dr. Albert Cook, O.B.E., and published broadcast under the signature of the Hon'ble the Principal Medical Officer and myself. In addition to this Dr. Cook has undertaken extensive tours of the Protectorate on a crusade against venereal disease. Dr. Cook has a wonderful and thoroughly well-earned reputation amongst the population and is pre-eminently fitted to undertake this duty. His influence is based on a record of achievement and he stands alone amongst the Europeans of Uganda in native esteem.

2. The Provincial Commissioner, Buganda, at the instance of the Native Government, has asked that a short description of the course and length of treatment of venereal diseases be written in the vernacular for publication with a view to eradicating the idea in the native mind that it is possible to be cured of venereal disease in a few days or weeks. This paper is in course of preparation.

3. Dr. Webb undertook an extensive tour for propaganda purposes in the months of August and September in the Counties of Busiro, Mawokota, Gomba, Busuju and Butambala.

XVII. *Compulsory Examinations.*

1. It should be made clear that examinations are not a prominent feature of this work and occupy only a minor position in it. Examinations are undertaken at the request of the chiefs. The examinees set great store by the examination certificates which are handed to each person found free from infection. Should any one refuse examination, he or she is refused a certificate, but beyond this no pressure is exercised by the Medical Officers.

2. No great importance can be attached to these examinations because of the uncertainty of the procedure followed by chiefs for gathering together persons for examination, that is, whether any favouritism exists and whether any exemptions are permitted. Moreover, large batches are usually collected and it is difficult for Medical Officers to make more than a very crude survey of an examinee in the time available.

3. More importance is attached to these examinations by the native authorities than by us. It was suggested at a very representative Baraza at the headquarters of the Native Government that it should be insisted that every Muganda should be compelled to be in possession of a certificate of examination from here.

A speaker suggested that in this way complete suppression and control of venereal disease could be effected. I replied disagreeing, and pointing out that the certificate was only of value for the moment it was received, and that the holder might become infected within an hour of its receipt.

4. In view of the keenness of the Native Government on the procedure I think we ought to be willing to fall in with their views whenever we are asked to conduct these examinations. The process has certainly resulted in the treatment of a large number of persons who would not otherwise have been treated.

XVIII. *Prevalence of Venereal Disease.*

It is difficult to make an accurate estimate, but considering the results of physical examinations and blood tests of seemingly normal population that have been conducted, and allowing in the case of physical examinations, (*a*) for the numbers who escape detection owing to the hastiness of the examinations, and (*b*) for the probability that a number of infected succeed in altogether escaping examination, I am inclined to assess the prevalence of recently acquired and acute contagious venereal disease at from ten to twenty persons per 100 of population. It seems probable that almost every native (about 80%) either has or has had one of the venereal diseases in one form or another.

XIX. *Buildings.*

1. Appendix IX shows a list of the buildings erected by the medical staff of Mulago and also those by the Public Works Department. It will be seen from this list that the greater part of venereal disease expenditure during the year and a great part of the energy of the staff has been devoted to buildings and equipment. (Appendix IX)

2. All the buildings erected in 1919-1920 by the Public Works Department, all of a temporary nature, are now reported worthless and beyond repair; all will have to be replaced. It appears from our experience that the depreciation on temporary buildings is to be assessed at nearly 100% per annum, and that temporary buildings are a very costly expedient.

XX. *Pathological Report.*

Dr. Webb's report is shown in Appendix X. (Appendix X)

XXI. *Existing Government Dispensaries and Venereal Disease Treatment.*

A sum of Shillings 1,205/- was issued to Masindi and Gulu Dispensaries for payment of native staff and purchase of food for the maintenance of venereal disease sick. Owing to pressure of work here and shortage of staff, it has not been possible for us to take any share in the work at these dispensaries or give any guidance to the Medical Officers in charge, though repeated requests have been received from the Medical Officer, Gulu, for a visit from a special Medical Officer with a view to unifying methods.

D. Conclusions.

The end of this year finds us with a hospital over-filled, an out-patient attendance greater than in any of the hospitals in Uganda, greater almost, I believe, than in any other hospital in Africa and exceeded at few venereal disease clinics in Europe. We are spending money at a rate not provided for in the Estimates, and using drugs and dressings at a rate which I understand the Medical Stores of the country cannot afford nor maintain. The Estimates for the cost of the maintenance of anti-venereal disease work for 1922 were drawn up in April, 1921, and are now known to be inadequate. It was difficult at that time to foresee the development that has actually occurred. It seems that it is the success of this work that militates against its maintenance; the more it develops the more difficult will it become from a financial point of view to maintain it. We have through the card system, the credit for which is largely due to the Superintendent, Mr. E. S. Smout, a means we have not had before of making crucial examination of our work and results; we have a greater opportunity than ever before of examining closely the venereal diseases problem in relation to costs, and it seems to me that in the rush of the work we ought to stop and consider how this work is going to develop, what it is to cost, and how far financial circumstances will permit of its extension and even of its maintenance. I feel also that I ought to offer suggestions for the future of the work on lines that seem practicable of achievement; I therefore submit the following conclusions:—

1. This work has been carried on exclusively so far in Buganda. No other Provinces have had any real share in the special expenditure, though I believe certain steps have been taken in the Eastern Province, but without guidance from here, and small grants have been made to Government Dispensaries at Gulu and Masindi.

2. The major part of the expenditure is due to the entire absence of housing accommodation for the necessary medical staff, European and African, and the absence of hospital accommodation for Africans. Whether these measures are continued or not, a proper African hospital, with the necessary accommodation for European and African staff, is a contingency that must be faced in the near future. If the existing venereal disease buildings are so used, it seems that a highly useful purpose, for which there is great need, has been served by these measures.

3. If development goes on at the pace of the last two months of the year we shall have to face the problem of coping with at least 200 in-patient sick, and attendance of out-patients probably approaching 100,000 annually. This is a situation which cannot be attempted with the present buildings, staff and resources. One remedy is the rapid equipping and opening of the auxiliary centres, but with the present staff and their present obligations to the sick at Mulago Hospital alone, there appears to be no prospect of their being able to co-operate in supervision and maintenance of auxiliary centres. Without supervision these centres are much best not opened as, while they may have a great scope for usefulness, they open a wide avenue for the greatest abuse.

4. It is a tribute to the efficiency of anti-venereal disease measures that at length an awakening of a sense of social shame has begun to appear. One of the reasons given lately for non-attendance here by natives is that they do not want it known that they are attending a venereal disease hospital and that this fact is beginning to carry a stigma; this is really a great achievement in the educational direction and gives one to hope that the day when venereal disease will be regarded as a serious bar to marriage or intimate relations is not far distant.

Natives themselves are saying that were this a general hospital and it could not readily be known for what disease they were being treated, the attendance for venereal disease would be increased.

Sir Apolo Kagwa, K.C.M.G., states that if Mulago could receive general patients, he thinks, for the reasons given above, that the venereal attendance would be doubled.

5. This appearance of awakening of a social sense in the Buganda Kingdom should be taken by us as an indication of desirability of change of policy. Our attendance in the first instance was compulsory, and re-attendance is secured mainly by compulsion, but this is tending to give way to a sensible recognition of benefits received. Compulsion for treatment is a principle suitable of application to a primitive or child-race such as the Baganda; a full exhibition of free treatment is a necessary corollary to compulsion. On evidence of an awakening of a moral or social sense being forthcoming, the question of withdrawal of compulsion may be considered, but with this should come the gradual withdrawal also of lavish grants to enable free treatment to be carried out.

6. It seems certain that the necessity for compulsion is being in part eliminated and replaced, in the Kampala area at least, by a genuine desire for treatment for its own sake. Another factor in the situation is that of payment. The idea of payment for treatment was suggested by His Excellency Sir Robert Coryndon, K.C.M.G. Though we were dubious of the effect of insistance on payment from patients, for the most part attending compulsorily, and though protests were made by some natives, the procedure is an undoubted success in practice and opens a new era in native medical treatment in Uganda by Government. Our receipts have shown a steady increase. With the development of this idea of payment, which I am sure will take place, will come further inroad into the province of compulsion. Those natives who have money, and they are daily a growing class, are willing to pay for good hospitalisation and treatment.

7. For these reasons I think the best policy of anti-venereal disease work in the future will be the erection of really good native hospitals whereat a high level of efficient venereal disease treatment will always be available, but which will only form an important part of the general work. That is, development of anti-venereal disease should proceed along the lines of combination with general native medical work rather than by separation and specialisation. Special expenditure will be necessary for a few years longer to consolidate and fructify the work that has been taken up. The direction of this special expenditure should first and foremost be concentrated on a really free supply of anti-venereal disease remedies and above all on Salvarsan or its substitutes. An enormous success followed on Government expenditure on free Salvarsan in certain Crown possessions in the treatment and suppression of yaws; a similar success awaits us here, and depends first of all on a full and free supply, and secondly on adequate means of distribution.

8. In regard to the first, it is not intended that payment for doses shall entirely cease; we should continue to collect as much as we can, but patients should not, as I fear has been the procedure in the past, have to await collection of the price of Salvarsan before receiving the dose. Distribution should be the primary concern and collection of its cost a secondary matter. All hope of collecting ten weekly payments of six shillings from natives should be abandoned. One dose of ·6 grm. costs six shillings and can be divided between two persons. A course of ten doses of ·3 grm., which will be adequate, will cost 30/-. In regard to the second, the means of distribution, every available source should be used. One large avenue at present neglected is the voluntary hospitals of the country. These are almost entirely Mission hospitals. They are for the most part well-built and equipped and well staffed, and they merely require the necessary drugs and apparatus, and directions as to their use. Another avenue is through the agency of existing Government native medical establishments; this latter procedure is not in my opinion, for reasons which need not be set forth here, likely to have good or useful results, and is not recommended. I would epitomise the foregoing by saying that expenditure on special drugs and appliances alone will not provide a remedy, in the absence of really good hospitalisation, and that one of the best achievements of venereal disease work has been in providing a stepping stone towards the development of a good Native Government hospital in Buganda.

9. It has been ascertained that the cost of carrying out the permanent buildings required for Mulago for venereal disease purposes will be enhanced by about one-third only by the combination of venereal disease work with general work. At the moment when the development of anti-venereal disease measures calls imperatively and impartially for the consideration of building of further hospital wards for the accommodation of sick, there also arises the new question of the erection of a native general hospital. Hence there appears a danger of two native medical institutions arising and vieing with one another for staff, buildings, and expenditure on water supply, lighting and other common requirements. A suggestion has therefore been made to the Hon'ble the Principal Medical Officer that the two institutions be combined and the following extracts from a letter to him explain the situation:—

> "1. A grave issue has arisen in connection with the buildings here; the temporary 3rd class house occupied by Dr. Davies is reported as tenable only for a further six months (it shows signs of collapse), the three temporary wards which were to have been ceilinged and re-roofed in 1922 are now reported beyond repair, and the quarter I occupy is unsafe and has to be rebuilt. Hence a position is arrived at when it becomes essential to consider the ultimate future of Mulago and either face drastic curtailment of building and general engineering plans and reversion to further temporary buildings, or a bold increase of permanent building developments.
>
> 2. Of these courses, I recommend the latter. There could be no question of the propriety of this course should it be decided to construct the new native hospital on Mulago, and as I have received your invitation to submit a scheme combining a venereal diseases with a general native hospital, I have drawn up the rough scheme and a plan shown in appendices to this letter.
>
> 3. The points in favour of a combined scheme are:—
>
> i. The addition of 100 general in-patients and, say, 100 daily out-patients would not involve a very great disturbance of routine here and would require comparatively little additional staff. Separate scheme will involve at least 1½ times the staff required for a combined scheme.

ii. At a time when you are pressed for medical staff and supervisory officers by having the buildings on the spot here we could submit designs and exercise the necessary suspervision over the evolution of a native general hospital; moreover, the new hospital could come into being at a very much earlier date than would otherwise be possible and we could inaugurate it.

iii. It would seem undesirable to divide the resources of the Public Works Department into two large undertakings for similar buildings a mile apart and ask them to provide water supply, lighting arrangements and Medical Officers' houses for two places; probably both would suffer in the event.

iv. Mulago venereal disease work must extend and develop. If a general hospital is built at Makerere, duplication of buildings applicable to both hospitals will tend to occur and continue, and there will be reluctance to push on with the development of either.

v. Mulago is reasonably near Nakasero and Makerere, where the medical school is to be, and Namirembe. The scheme means a combination of forces and resources for the good of both.

The points against a combined scheme are:—

1. Partial diversion of the entire energy of venereal disease staff on to second channel and the chance that venereal disease measures may be subordinated and hampered by the other duties and by divided attention."

10. When the expenditure during the year is considered in relation to the total number of buildings and fittings carried out at Mulago and the Auxiliary Centres, the total in-patients and out-patients, the exhaustive clerical work performed, and the relatively small staff, it would seem that the expenditure has not been considerable. If a comparison is made of the annual grant by Government to the Somerset Hospital, Capetown, of £17,000 in 1916 (total income £28,000, total expenditure £27,000) for the treatment of 2,500 in-patients and 12,500 out-patient attendances, *i.e.*, one-third only of our out-patient attendance, it will be realized that our achievements with the means at our disposal have heen fairly satisfactory. Further, a comparison of the staff list of the Somerset Hospital with that of Mulago makes the comparison still more in our favour. Another interesting comparison is that with the Westmininster Hospital, London, whose in-patients in 1916 were 2,000, and out-patients 13,000 and whose expenditure was £23,395 (Sir Henry Burdett's Hospital Annual, 1917).

11. It has been asked what permanent good are these measures achieving, and if we leave off, will not matters in a short time revert to the *status quo ante.* It may be presumptuous to attempt to answer these questions on the results of a broken year's work, but I submit the following:—

(*a*) The effect of treating infected persons at the rate of 50,000 per annum in the native capital and the opening up on a ring round the capital of five auxiliary centres must have a very considerable effect in checking the infection rate.

(*b*) The arising of an idea in the native mind that venereal disease is an undesirable thing, the fact that it is beginning to carry a stigma, together with evidence being forthcoming that compulsion is already being overshadowed by a desire to obtain treatment for its own sake and sometimes even to pay for it, strongly suggest that these measures are exerting a decided educative influence on the natives.

(*c*) I believe strongly that this educational effect will continue and increase in strength after the special measures have ceased and that with the spread of general education lies the best hope of remedy for the present state of affairs.

(*d*) We are at a phase in the development of the native. The broad issue is that the freeing of the women was concomitant with the introduction of civilisation; the restraints that should have accompanied the process, moral, mental and social, have of necessity followed slowly or are only just beginning to make themselves felt.

New standards, new interests and a wholly new outlook will have to filter through the whole native population and become firmly established among them by social pressure. Ideas of domesticated existence and family life, as we know them, are as yet rudimentary only with many of the natives. It is a lamentable fact that the women are far behind the men in their social development; their outlook on the responsibilities attaching to their freedom is microscopic. It is in these particulars that the scope of general education lies and on which the future of this race really depends.

(*e*) In the matter of general anti-venereal disease policy, Dr. and Mrs. Albert Cook's Maternity Training School scheme, embracing the training of native midwives, the opening of a large central lying-in hospital, and the erection of rural lying-in centres in the charge of native midwives, will have an enormous influence on the general and moral education of the women.

E. Recommendations.

I. The conversion of Mulago Hospital into a permanent general native disease hospital (already approved in principle by the Hon'ble the Principal Medical Officer).

II. Immediate distribution by this branch of the Medical Department of Salvarsan substitute in amounts sufficient to allow of equivalent to 3 grammes total being administered to all primary and secondary syphilitics applying for treatment irrespective of payment. Cost £1,000.

III. Grants-in-aid to voluntary hospitals for the treatment of venereal disease under conditions set forth in Appendix V of this report. These grants to consist of, (*a*) issue of special equipment and drugs, (*b*) native clerical staff to maintain returns, (*c*) financial grants, in respect of each in-patient sick maintained, at the rate of 30 cents of a shilling per patient per diem. Estimated cost, £1,500 per annum. (Appendix V)

IV. Maintenance of grants now being issued to Native Government to complete building and equipment of Auxiliary Centres. Estimated cost, £500.

V. Preliminary building of a native hospital in Bunyoro on modern lines, which should at first be a venereal diseases hospital as the best means of attacking the venereal disease problem there, and secondment to it for duty of an experienced Medical Officer with a knowledge of the local language.

VI. *Staff.*—The Nursing Sisters to be increased at Mulago to two, with provision for their relief. One Medical Officer will be necessary for the replacement of Dr. Lamont, and the contingency of the necessity for the addition of one Medical Officer (making five in all) in connection with development of the five auxiliary centres and of the general hospital must be faced in the near future. It is unjustifiable with the present staff of three Medical Officers only to open the three Auxiliary Centres now ready. The staff list shows an allotment of five Medical Officers.

VII. Building of Administration block for the Mulago Hospital as an early and vital part of a General Hospital scheme.

F. Acknowledgments.

In concluding this report I would ask that an expression of my deep appreciation be conveyed to Mr. J. C. R. Sturrock, the Provincial Commissioner, Buganda, and Mr. J. P. Postlethwaite, District Commissioner, Mengo, for their very great service throughout the year. They have afforded us every possible assistance and support and contributed very largely to our success. I would also ask permission to be allowed to place on record my deep sense of appreciation of the unfailing support and co-operation in the most intricate and difficult matters throughout the year of the Hon'ble the Principal Medical Officer. I would like to acknowledge also Dr. Albert Cook's great service to anti-venereal measures and our indebtedness to him. Not only is he always ready and willing to advise in any way he can, but he has received from us a constant stream of patients whom for one reason or another we were unable to treat here. He has done practically all our Wheelhouse operations.

G. J. KEANE, Major,
Specialist Officer, Venereal Disease.

Appendix I.

MULAGO HOSPITAL. OFFICE HOURS: 8 A.M. TO 4 P.M.

MALE WARDS AND CLINIC.

	Morning visit 8 a.m.	*Evening visit 6.30 p.m.*
Monday ...	Dr. Davies.	Dr. Davies.
Tuesday ...	Major Keane.	Major Keane.
Wednesday ...	Dr. Webb.	Dr. Webb.
Thursday ...	Dr. Davies.	Mr. Smout.
Friday ...	Major Keane.	Dr. Davies.
Saturday ...	Dr. Davies.	Major Keane.
Sunday ...	Dr. Webb.	Mr. Smout.

Morning Clinic: *Daily 8 a.m.* *Afternoon Clinic*: *2 p.m.*

FEMALE WARD AND CLINIC.

Morning visit.—Dr. Margaret Lamont daily before morning clinic. Hours of attendance of Dr. Lamont: 8.30 a.m. to 12.30 p.m.

Evening visit.—Between 5.30 and 7 p.m. on 3 evenings a week, other evenings by the Medical Officer visiting male ward and by arrangement with him.

Saturdays.—Morning clinic 9 a.m. One Medical Officer for males and females, long distance, emergent and new cases only attended.

Appendix II.

Copy of letter from Baganda Chiefs.

KAMPALA,
25TH JUNE, 1921.

TO,
THE PROVINCIAL COMMISSIONER,
BUGANDA, KAMPALA.

SIR,

We respectfully submit the following to you which, though it may seem a small matter, is nevertheless deserving of consideration by the Government.

2. We learn of grave discontent amongst people sent to Mulago at their being asked to pay *each day* of their attendance. No matter how trifling the payments may be they furnish an ever-increasing reason for patients not attending in accordance with the instructions given to them.

3. Doubtless, Sir, you will say a man sets no value on a thing he pays nothing for; that is true, but the Baganda are accustomed to the idea that the British Government is ready to give many benefits to them without expecting any return.

4. It is because we wish that Mulago Hospital shall be highly appreciated by the Baganda that we beg you to consider the advisability of allowing the question of payment to be dropped until a more thorough understanding of what is being done for the people exists. We have no doubt that you will give consideration to this matter.

We are, Sir,
Your obedient servants,

S. W. Kulubya, *Mutuba III, Kiadondo.*
Sep. R. Kadumukasa, *Sabadu we Kiadondo.*
S. M. Bazongere, *Musale, Singo.*
Ashe S. Mukasa, *Mutuba III, Bulemezi.*

Extract from letter from P. C., Buganda, to S.O.V.D.

"... ....it would in the long run be economy for the Government to remit fees for a stated period, say six months or one year. I feel convinced that what is mainly required at present is that your work should become known as widely as possible by its results. Once a wide knowledge is achieved among the people nothing will keep them from flocking to your hospital."

Appendix III.

Estimated cost of a bed in Mengo Hospital per annum.

	Florins	*Cents.*
Food: Matoke and Lumonde	36	50
do. Extras: Milk, Soup, Rice	3	65
Water	10	00
Fire-wood	6	10
Repairs to ward (distemper, etc.)	1	50
Scavenging (sanitary) and cleaning	2	66
Native dressers	22	50
Drugs and dressings (excluding cost of Salvarsan) ...	46	00
Soap	8	50
Bedding	20	00
Lighting	5	00
Clothing	10	00
TOTAL FLORINS ...	172	41
	£17 4s.	10d.

Appendix IV.

The Effect of the routine treatment of Primary and Secondary Syphilis as practised at Mulago Venereal Hospital.

In the year 1921, of 790 cases of primary and secondary syphilis who attended Mulago, 279 or 37% defaulted after an average attendance of 7 weeks, 37 had been discharged after an average of 9½ weeks, and 6 had died.

Obviously the greater part of the 468 who were still attending continued to do so for a longer or shorter time. These represent 59% of the total attendances, and it is probable that they attended an average course of 12 to 15 weeks. Consequently, a period of treatment of from 10 to 16 weeks or more has constituted a "course" of treatment, and the aim of all anti-syphilitic measures in Uganda must be to sterilize as many syphilitics as possible within this time. It is not within practical politics to force natives to attend for treatment over a number of years, except in a very few cases. They do and will attend for three or four months, and it is during these three or four months that every effort must be made to bring about the maximum curative effect possible.

It is a well known fact that the natives of Buganda do not tolerate mercury in doses higher than 1/5 to 1/4 of those given to and tolerated by Europeans. The therapeutic effect of the reduced dose on natives appears to be identical with the larger dose on Europeans. The routine treatment of syphilis at Mulago in 1921 mainly consisted of mercury in one form or another. Weekly, each patient was given either 1/4 or 1/5 grain of metallic mercury intramuscularly, or 4 minims of calomel cream intramuscularly, or 1/7 grain of mercury cyanide intravenously. Salvarsan and its substitutes were used sparingly and usually issued only on payment. At the end of a typical three months course a patient would have received either 3 grains of metallic mercury or 2 grains of mercury cyanide, and in addition ·3 to ·6 gramme of a Salvarsan substitute. It is clear that this routine did not produce satisfactory results.

The Wassermann reaction was not available throughout the year, and the Sachs-Georgi reaction was used as the routine blood test, and by far the greater number of bloods were tested by this reaction alone. As the contention depends in part on the results of blood tests, it is necessary to compare the results of the Wassermann and Sachs-Georgi reactions as performed at Mulago. 1,147 serums were tested with both these reactions with the following results:—

TABLE 1.

	No. of Serums tested.	No. Positive to S. G.	No. Positive to W. R.	% Positive to S. G.	% Positive to W. R.
1. General Population ...	216	101	100	46½	46
2. Yaws	17	12	16	0	0
3. Negative Controls	9	0	0	0	0
4. Tertiary Syphilis	148	105	126	70	85
5. Latent Syphilis	124	76	99	61	80
6. Secondary Syphilis	517	361	444	70	86
7. Primary Syphilis	116	65	77	56	66
TOTAL ...	1,147	720	862	63	75

It will be seen from this table that the Sachs-Georgi reaction gives readings of from 10% to 19% lower than the Wassermann reaction in all cases of syphilis.

Secondary Syphilis.—One thousand two hundred and thirty-nine serums of secondary syphilitics were tested by the Sachs-Georgi reaction.

TABLE 2.

	Positive Reaction.	Doubtful Reaction.	Negative Reaction.	Total.	% Positive.	% Doubtful.	% Negative.
1. Total Serums	879	188	172	1,239	71	15	14
2. Serums of cases showing active signs of disease ...	655	97	74	826	79½	12	8½
3. Serums of cases showing no signs of disease ...	223	91	98	412	54	22	24

Five hundred and seventeen serums were tested by both the Sachs-Georgi and the Wassermann reaction.

TABLE 3.

	Serums Positive S. G.	Serums Positive W. R.	Total Serums.	% Positive S. G.	% Positive W. R.
1. Total Serums	361	444	517	70	86
2. With active signs	263	318	349	75	91
3. Without active signs	98	126	168	58	75

The inference from these two tables is that if 100 secondary syphilitics undergo treatment until all active signs of disease have disappeared, only from 16 to 25 of them will have converted a positive blood test to a negative blood test.

The following table is compiled from total serums tested by both reactions separately. The Sachs-Georgi results are not controlled by the Wassermann reaction in this case, and the results tabulated in table 1 should be borne in mind:—

TABLE 4.

	Total serums tested by S. G.	Total serums tested by W. R.	Serums Positive to S. G.	Serums Positive to W. R.	% Positive to S. G.	% Positive to W. R.
Cases treated 0-3 weeks	646	307	561	292	87	95
Cases treated 3-6 weeks	209	114	155	99	74	87
Cases treated 6-30 weeks	312	211	178	156	57	74
Cases who attended after an average rest of two months after completing 1st course ...	108	68	66	55	61	81
Cases attending 2nd course	27	12	16	11	59	—
Cases completed 2nd course	5	2	2	1	—	—
TOTALS ...	1,307	714	978	614	74	86

Note.—The difference in number in the total serums in this table and in 1, 2 and 3 is accounted for by the fact that whereas the latter were taken from laboratory records, table 4 is taken from the case records, which contain a number of reactions not noted in the laboratory records.

This table shows quite definitely that a complete course of treatment of from 6 to 30 weeks, average 12·4 weeks, causes a drop of between 21 and 30% in number of positive serums and that there is a definite rise in the percentage of positive serums in cases which have rested for an average period of two months.

A consideration of the clinical results of this routine treatment yields no better results.

321 cases had undergone treatment for periods varying from 1 to 7 weeks. The average length of attendance was four weeks; 212 retained active signs of disease after attending for an average course of 3·4 weeks; 109 had lost active signs, and had attended for an average time of 4·4 weeks.

75 of these cases, who had been treated on an average for 4·7 weeks, returned for observation or treatment after a rest averaging 10 weeks (3 to 34 weeks). At the end of their short first course of treatment, 32 had signs of active disease, 43 had no signs. After their rest, 42 had active signs and 33 had no signs.

346 cases attended a course of from 8 to 30 weeks, averaging 12·2 weeks; 116 had active signs after an average course of 12·4 weeks, 230 had lost all signs after receiving treatment for an average period of 9 weeks.

108 of these cases, after completing a course of average duration of 12·4 weeks, returned for observation after 2 to 24 weeks, average 8 weeks. After completing the first course, 14 had signs, 94 were free from signs. On returning, 41 had signs and 67 had no signs.

To tabulate these results in percentages :—

		All Cases.	Return Cases.
Course of 1 to 7 weeks	End of course % with signs	66	43
Average 4 weeks	After a rest of 10 weeks average % no signs	...	56
Course of 8 to 30 weeks	End of course % with signs	33	13
Average 12 to 20 weeks	After a rest of 8 weeks average % no signs	...	38

If 38 per cent of cases who have undergone as long a course as it is practicable to give, show active signs of syphilis after 8 weeks rest from treatment, it is reasonable to infer that a much higher percentage will remain infective after a longer period of rest.

Primary Syphilis.—The results obtained from a consideration of the clinical and pathological effect of treatment on primary syphilis are almost identical with those of secondary syphilis, and they need not be considered in such detail. 120 primary syphilitics attended during the year for treatment. The figures of the blood tests are on the whole too low to express in percentages. The percentage of positive Sachs-Georgi serums drops from 70 per cent in untreated cases to 51 per cent in cases who have completed a full course of treatment, and shows a very marked rise in those cases who re-attended after a period of rest. Clinically, of 58 cases who attended a full course of an average of 14 weeks, 15 developed secondary syphilis whilst undergoing treatment; of 24 cases who attended a full course of an average of 11 weeks, and who were seen again after an average rest of 8 weeks, 10 returned with active signs of primary or secondary syphilis; of 10 cases who defaulted after a short course of less than 7 weeks, and who were seen subsequently, 8 had secondary syphilis, 1 had primary syphilis and one showed no signs of active disease.

Conclusions—From a consideration of the clinical and pathological data given above, it would appear that the routine treatment of Syphilis I and II at Mulago carried out over 12 weeks, results in between 60 and 80 per cent of the patients retaining a positive blood reaction, and at least 38 per cent retaining active signs of disease after a rest from treatment of 8 weeks. It may be reasonably inferred that between 60 and 70 per cent remain infective after completing a course. It has been pointed out earlier in this paper, that an extension of the duration of treatment is not practical. Increasing the amount of mercury given over this period would be to push the drug to a dangerous degree and merely result in salivation. If it is admitted, as I think it must be, that the results are not satisfactory, there remains only one course open, and that is to push Salvarsan substitutes to a much greater extent. I suggest that less than 2 grammes of Arsphenamine given over a course of twelve weeks is not likely to alter the results very much, and I hope that in 1922 this amount will be adopted as a routine in every case of primary and secondary syphilis. If this suggestion is agreed to I think all ideas of obtaining money in sufficient amount to refund the cost of the drug from natives for its administration must be abandoned and the issue be largely a free one. The cost of a free issue of the drug to primary and secondary syphilitics in the amount mentioned would be about 18 shillings per head; this sum does not appear to me to be excessive when the probable results are taken into consideration.

W. LESLIE WEBB, M.B.,
Medical Officer, Mulago.

Appendix V.

OPERATIONS PERFORMED.

A. *Urethral dilatations on cases of Stricture and Extravasation of Urine.*

191 cases operated on on 328 occasions.

B. *Other operations.*

Amputation of Penis	1
Circumcisions	30

Appendix VI.

Copy of letter to S.M.O., Mengo Hospital, and M.O. Nsambya.

"I wish to submit the following:—

1. Analysis of our case cards here shews that after energetic anti-syphilitic treatment consisting mainly of weekly injections of mercury, either intramuscularly or intravenously, together with one or two doses of Salvarsan substitute during a period of ten to twelve weeks, a high proportion of cases remain clinically highly infective.

2. There is a wide-spread impression in the native mind that syphilis can be cured in a few weeks, that one dose of 606 constitutes full insurance against the continuance of the disease and renders further treatment unnecessary, that circumcision is a complete remedy, and that secondary syphilis is the result of treatment of primary syphilis.

3. There appears no doubt that defaulters in attendance here, seek and obtain at Mission dispensaries refuge from our well-meant efforts to cure them.

4. I am aware of the field that medical missionary work offers in anti-venereal disease treatment and of the opportunities that exist for successful prosecution of anti-venereal disease measures in this way, but I am bound to feel concerned at the inadequacy of the treatment given at Mission Hospitals and to ask your help in trying to raise the standard of this treatment.

5. There is nothing in this letter intended to give offence or deprecate the efforts of Mission medical treatment, but I must present the case very clearly and definitely if I am to prove that this is a matter urgently demanding remedy and one that Mission Medical Officers cannot conscientiously leave in its present position.

6. I feel that a considerable amount of anti-venereal disease drugs are probably being wasted in insufficient treatment, and I ask you to consider, if in a highly efficient and well-organised hospital such as Mengo (Nsambya) the standard of cure and insistence on re-attendance is at a low ebb, what can the efficiency of treatment at lesser centres be.

7. As a remedy, I propose that a minimal course of adequate treatment be discussed and fixed upon, that patients suffering from Sy. I and Sy. II be informed at once of the liabilities they incur, *i.e.*, of being compelled to attend for such fixed minimal course if they seek treatment from qualified practitioners or their European assistants for this disease, and that thereupon the minimal course be explained and insisted on and subsequent defaulters in attendance reported.

8. For clinics conducted on these lines I am prepared to ask the Hon. Principal Medical Officer to sanction the issue of drugs, stationery, instruments, and of trained clerical and clinical assistants for intravenous injections.

It is not possible to go into details until a preliminary representation has been made to you and I am informed whether any such scheme of grants is likely to be accepted."

Appendix VII.

Venereal Diseases and Voluntary Hospitals.

I. Free treatment and grants in respect thereof will be limited strictly to cases taken on the register.

II. *The Register.*

The register will consist of (*a*) an address book in which the names of the patients and such addresses as will enable them to be traced are entered in serial number, and (*b*) a series of cards, one for each patient and numbered in accordance with the address book, on which the physical signs, diagnosis and treatment of the patient are entered.

III. *Nature of Cases to be taken on the Register.*

All cases of primary and secondary syphilis, all cases of soft sores, and all cases of acute infective gonorrhœa will be registered. It is optional to place on the register cases of tertiary, latent or congenital syphilis, chronic gonorrhœa or stricture.

IV. *Warnings to be issued to Register Patients.*

1. That they infringe the law if they fail to present themselves for treatment when directed.
2. In the case of syphilis, that they cannot be cured of this disease quickly, but that treatment must be continued for several months.
3. That in the case of gonorrhœa cure depends entirely on regularity of attendance which should be daily.

V. *Discharges.*

No case will be discharged unless the Medical Officer is satisfied that such case is cured according to the standard of cure laid down.

VI. *Standard of Cure.*

For primary and secondary syphilis the standard of cure laid down by the Ministry of Health of England, should be approximately adopted. That is, observation over a period of two years or more, of which in the last 18 months the patient has been free from signs of disease; during this period, adequate intermittent treatment should have been given, and usually the blood reaction should be negative on the two last occasions it is taken. The standard of cure in gonorrhœa laid down in England is not practicable in this country. Each case of gonorrhœa in the male should be tested by the two-glass method twice weekly; if both glasses are clear on two successive occasions, the case may be regarded as cured. The standard of cure of gonorrhœa in females has not yet been determined, but no case should be dismissed as long as a corvical, vaginal, or urethral discharge remains. Soft sore is regarded as cured when the sores are healed.

VII. *Diagnosis.*

In clinically doubtful cases of venereal sores, every effort should be made to exclude or establish syphilis. No anti-syphilitic drugs should be given until a diagnosis of syphilis is firmly established. In every case of doubt, before general treatment is commenced, resort should be made to laboratory methods.

VIII. *Attendance and Defaulters of Register Cases.*

Cases of syphilis should be required to attend weekly until a course is completed. All other cases should be required to attend daily. In cases of syphilis, after one course is completed, a rest from treatment of from one to three months may be given and the patients required to attend after this period for observation, and, if it is possible to persuade them, for a second short course of treatment. Patients who absent themselves from treatment for one month without sanction are "defaulters." Primary and secondary syphilitics who have attended one full course of treatment, and who fail to present themselves for observation after six months, are also to be regarded as defaulters.

Irregular attendants need to be regarded and treated as defaulters, but every effort should be made to persuade them to attend regularly.

In many cases, particularly amongst women, it will be found necessary to give them leave of absence of between two to six weeks in the middle of a course to enable them to carry out some domestic or other duty. It has been found that to refuse such leave usually results in the patient becoming a defaulter, and although the granting of this leave is inimical to effective treatment, it is the lesser of two evils. Again, much can be done to limit this by persuasion.

IX. *Poll Tax, Luwalo, etc.*

Patients attending regularly for treatment, who are being pressed for taxes or work likely to interfere with effective treatment, may be given a recommendation for temporary exemption to the District Officer.

X. *Course of Treatment.*

A course of treatment for gonorrhœa or soft sore consists of such continuous treatment, given at the discretion of the medical officer, as will produce cure in accordance with the standard laid down. A course of treatment for primary or secondary syphilis consists of weekly administration of mercury and Salvarsan substitutes extending over a period of from 12 to 16 weeks. During this period not less than 3 grammes of Salvarsan substitute should be administered, and not less than the following amounts of one form or another of mercury :—

(*a*) Metallic mercury, in the form of Lambkin's or other cream, administered intramuscularly, 2½ grains, (*b*) calomel cream, administered intramuscularly, 3 grains or 48 minims, (*c*) mercury cyanide, administered intravenously, 2½ grains, (*d*) any other form of mercury, ¼ to 1/3 of the amount which would be given to a European attending an anti-syphilitic course in England over a period of 18 weeks. Such a course is not to be regarded as a cure for syphilis. When practicable, it may be extended over any period, or may be followed, after intervals of rest from treatment, by subsequent courses, each of 6 to 8 weeks duration with a proportionate administration of drugs.

XI. *Returns.*—The following returns are required :—

1. *Monthly.*—List of defaulters, as laid down in para. VIII. Serial number, disease, name, village, minor chief, gombolola chief, and saza should be given.

2. *Quarterly* return, as per attached example.

The following points should be noted in this return :—

(*a*) The totals of items 1 to 2 give the total persons under treatment for the quarter.

(*b*) Item 3*a* represents defaulters.

(*c*) The total of items 1 and 2 should agree with total of items 3, 4, 5 and 6.

(*d*) Persons noted in item 4 should not be in item 3.

(*e*) In item 2, persons suffering from two or more diseases (syphilis of any sort, gonorrhœa, and soft sore) are included under each heading.

(*f*) The percentage of people attending satisfactorily will be calculated as follows :—The total of items 3*b*, 4, 5 and 6, multiplied by 100, and divided by the total of items 3, 4, 5 and 6.

(*g*) The following persons should be put under heading 3*a* (defaulters) :—All cases of gonorrhœa or soft sore, who cease attendance before they have reached the standard of cure laid down in para. VI. All cases of syphilis on the register, who cease attendance before the minimal course laid down in para. X has been administered.

(*h*) The following persons should be put under heading 3*b* :—syphilitics who have completed a minimal course or courses, as laid down in para. X, but have not returned for further observation or treatment during the six months after the completion of the last course.

(*i*) Item 5 will not include any syphilitics on the register who have not been under observation for at least two years, as laid down in para. VI.

(*j*) Item 6 will include all syphilitics who have completed a course or courses, and who are resting from treatment for a period not exceeding six months.

XII. *Grants in Aid.*

The following grants will be made by the Government to those hospitals and dispensaries which undertake the obligations laid down above :—

1. Free issue of index cards, address books, returns, and all other stationery connected with the treatment of patients on the register.

2. The services of the clerical staff to a maximum cost of £50 per annum.

3. The free issues of such special equipment as is necessary to the administration of special drugs or special treatment. These will incude intravenous syringes and needles, irrigation apparatus, etc.

4. The free issue of the following drugs under the conditions laid down below :—

Salvarsan, or its substitutes.
Potassium Iodide.
Potassium Permanganate.
Lambkin's Mercurial Cream.
Solution of Mercury Cyanide for intravenous administration.
Solution of Antimony Tartrate.
Mercury Oxycyanide.
Sulphur, or Sulphur Tablets.
Unguentum Hydrarg.
Unguentum Hydrarg. Nit.
Copper Sulphate.
Alibour Water.
Dressings.

To those hospitals and dispensaries who show in their quarterly return a satisfactory attendance, as laid down in para. XI, of 70% or over, the total amounts of the above drugs expended during the quarter will be issued. Between 60 and 70% satisfactory attendances, three-quarters of the total expenditure of these drugs will be issued. No grant will be made for the quarter to hospitals shewing a satisfactory attendance of less than 50%.

A hospital adopting this scheme may for the first quarter either use their own drugs, or be issued with drugs from the Government on loan, this loan to be recovered from the free issue given to them after the first quarter.

5. In the case of primary and secondary syphilitics who cannot be treated adequately as out-patients, and who are admitted as in-patients for treatment, a daily subsidy of 30 cents of a shilling will be paid for each in-patient.

Daily Attendance Sheet for......................Venereal Treatment Centre.

Month ending...19........

	Sy. I Sy. II		Sy. III Con. Latent. A-N.		Soft Sore		Gon.		O. V. D. Yaws, etc.		N. Y. D.		Totals.		Amount of Salvarsan Substitute.
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
1															
2															
3															
4															
5															
6															
7															
8															
9															
10															
11															
12															
13															
14															
15															
16															
17															
18															
19															
20															
21															
22															
23															
24															
25															
26															
27															
28															
29															
30															
31															

RETURN

RELATING TO ALL

PERSONS WHO WERE TREATED AT THE TREATMENT CENTRE

AT...

During Quarter Ended..............................19........

	Primary and Secondary Syphilis.		Tertiary Ante-Natal, Congtl. Syphilis, Latent Sy.		Soft Sore		Gonorrhœa.		Other Diseases.		Total.	
	M	F	M	F	M	F	M	F	M	F	M	F
1. Number of persons who on 1st...............19... were under treatment or observation for...												
2. Number of persons dealt with during the quarter *for the first time* and found to be suffering from:												
Syph. I & II only												
,, III, Latent or Cong...												
Soft Sore only												
Gonorrhœa only												
Syph. and Soft Sore... ...												
Syph. and Gonorrhœa ...												
Gonorrhœa and Soft Sore ...												
Syph., Gon. and Soft Sore ...												
Other Conditions												
TOTAL ITEM 2												
TOTAL ITEM 1 AND 2 ...												
3. Number of persons who ceased to attend:												
(*a*) Before completion of a course of treatment for ...												
(*b*) After completion of a course, but before final tests as to cure of ...												
4. Number of persons transferred to other Hospitals for treatment suffering from ...												
5. Number of persons discharged after completion of treatment for												
6. Number of persons who on 1st........................ 19...were under treatment or observation for												
TOTAL 3, 4, 5 AND 6 ...												
7. Total attendances at O. P. Clinic of all persons suffering from												
8. Aggregate in-patient days of treatment given to persons who were suffering from ...												

9. TOTAL AMOUNT OF SALVARSAN SUBSTITUTES USED IN GRAMMES.	
	N. A. B.________________________
	Sulfarsenol ________________________
	Neo-Kharsivan ________________________
	Others ________________________

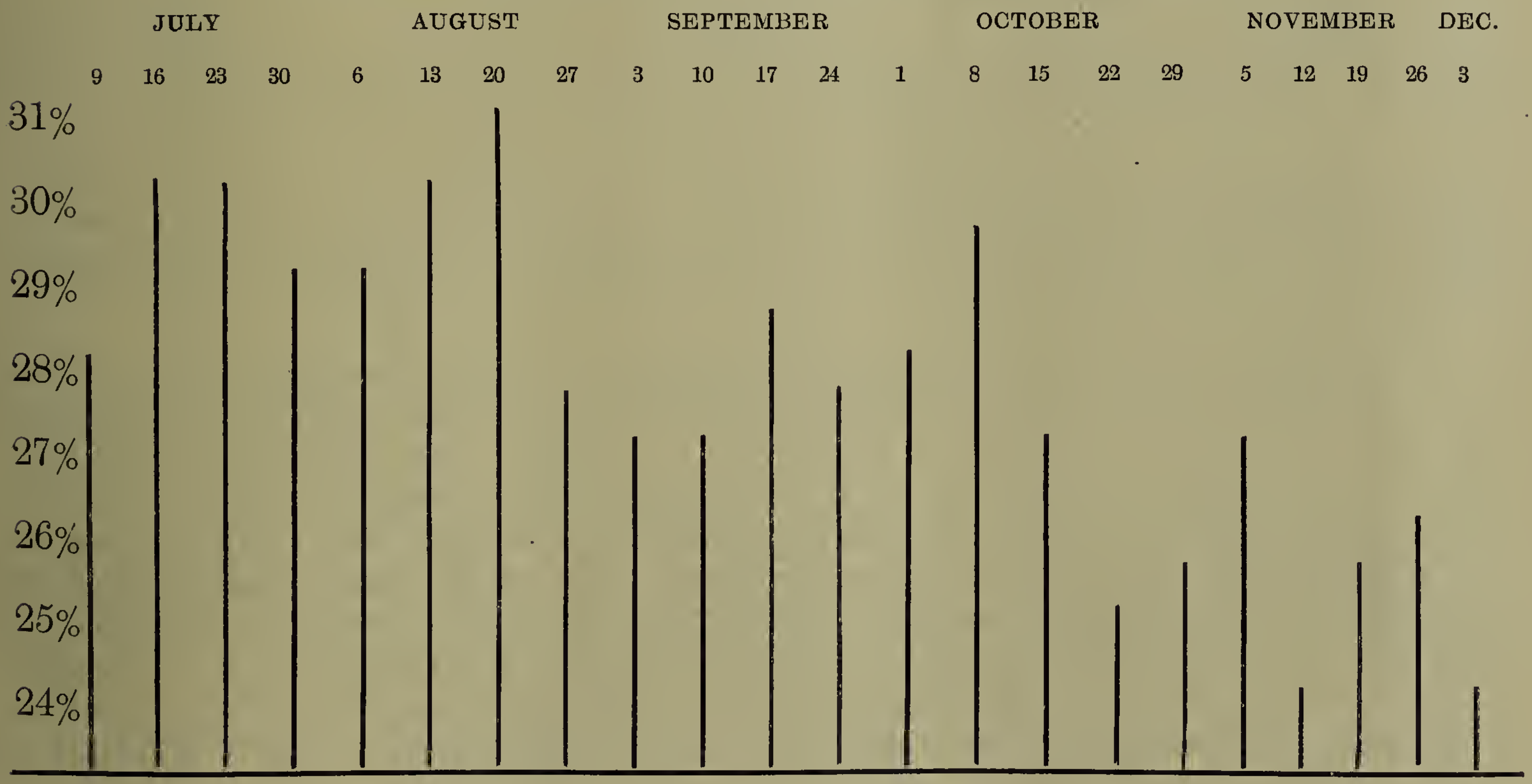
DAILY SHEET. GRAND TOTAL........................ DATE............................

Sy. I and II.		Sy. III Cong. Latent. A-N.		Soft Sore.		Gonorrhœa		O. V. D.		N. Y. D.	
M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.

(For entry of card numbers, to give necessary information for filling in Daily Attendance Sheet.)

Appendix VIII.

PERCENTAGE OF FEMALE PATIENTS TO TOTAL PATIENTS.



Appendix IX.

Buildings and Repairs carried out at Mulago by Public Works Department.

Major Keane's house repaired, Dr. Webb's house built, Dr. Davies' house repaired, Dr. Lamont's house built, Superintendent's banda built, 1 permanent ward, 1 dispensary, 1 operating theatre, 1 office building, 2 concrete tanks, 1 native latrine platform, 2 incinerators, 4 garages for cars and motor cycles.

Buildings, etc., erected and equipment made at Mulago by Medical Staff.

Nursing sister's house, servants' quarters and cook house, 3 pit latrines for Europeans (now filled in), 3 latrines for Europeans, 1 native latrine of galvanized iron (cement platform), 11 native pit latrines (three now filled in), 1 irrigation room altered and repaired, 3 houses for senior male attendants repaired, 2 sets of five quarters for male attendants built, 1 set of two quarters for female attendants built, 5 cook houses for attendants, 7 soakage pits, 6 bathing places, 1 bathing place with galvanized iron platform and tank plinth, 1 office building, 1 laboratory building 15′ x 15′, 1 hospital kitchen and cooking range, 1 animal house 15′ x 16′, 1 boiler house, 1 blanket sterilising cupboard house, 1 three-roomed paying patients ward re-roofed, ceilinged and new verandah posts, 2 servants' houses for above built, 1 kitchen for above built, 1 site for 3rd class house levelled and prepared, 2 galvanized iron kitchen tables with grease traps, 1 incinerator with galvanized iron shelter.

Carpentering work done for equipment of Mulago and Auxiliary Centres.

25 Benches, 20 stools, 24 tables (8′ x 3′ to 2′ 6″ x 2′ 6″), 70 bedside tables, 32 doors with frames, 26 windows with frames, 1 blanket sterilizing cupboard, 14 screens for wards and dispensary, 3 ward cupboards, 3 cook's cupboards, 1 dispensary ceilinged with Americani, 1 sister's house ceilinged with Americani, 4 animal cages.

Appendix X.

Annual Pathological Report, Venereal Disease Measures, Mulago, 1921.

Introduction.—The date of recommencement of the work after the war in the Laboratory at Mulago was the 23rd February, 1921. The only equipment available at this time was that which remained over from 1914, and the only building was the single-roomed brick house that was built in 1913. Of necessity, the beginning was very slow, and it was not until the latter part of May that any large amount of work could be undertaken. During the last four months of the year as much work was passing through the Laboratory as it could deal with.

Staff.—The staff of the Laboratory consisted of myself, Mr. E. S. Smout, and three native assistants. My own time was mainly taken up with other work, and it was only exceptionally that I was able to give more than ten hours a week to the Laboratory. Mr. E. S. Smout was similarly engaged in other work and was able to attend to pathological duties on Fridays only. Of the native staff, all were untrained when they started. Two are still, to all intents and purposes, untrained. One is now partly trained and shows great promise of becoming an efficient and reliable laboratory attendant.

Buildings.—The main building consisted of a square single-roomed house 15′ x 15′, built in burnt brick, with a tin roof and matchboard ceiling. It had no verandah and was unbearably hot to work in. In this room all the pathological work of the hospital was done, with the exception of the cleansing and sterilization of laboratory glass-ware. It was also my office in which all the clerical work of the pathological side was done, and served as a store for surplus laboratory equipment, and occasionally as an overflow room for clinical work. A temporary mud and wattle thatched-roofed house of the same dimensions was built in the middle of the year for the cleansing and sterilizing of glass-ware by the native assistants. At the same time a temporary animal house was built, which served also as a food and wood store.

Water Supply, etc.—A tank collected the water from the roof of the laboratory. For the last half year the tank was out of order, and there was no tap water supply. The water carried up by porters was quite unsuitable for use in a laboratory, and all the water used was first distilled. No power was available for driving centrifuges, shakers, etc. No lighting was available except paraffin lamps. Ice was obtained from Kisumu weekly, but the supply (100 lbs.) arrived at Mulago on Monday evenings weighing not more than 30 lbs. and only kept the ice chest indifferently cool until Thursday.

Equipment.—The laboratory equipment was generally insufficient. Only 96 Wassermann reactions could be done at a time. Incubator and water-bath room was insufficient, and reserves of all perishable and breakable articles very low. However, it would not have been possible to put any more into the existing one-roomed building.

WORK OF THE YEAR.

A. Syphilis.

Wassermann reaction.—The Wassermann reaction was done on 1,511 serums. The results were eminently satisfactory. The first batch of Wassermans was put up on May 3rd, 1921, using the Burroughs and Welcome anti-sheep amboceptor. The titre of this particular amboceptor was 1/3000. It remained active until May 29th, 1921, when it lost hæmolytic power owing to the impossibility of keeping it cool. All further batches of amboceptor from England were of a lower titre, 1/2000 or 1/1000, and were found on arrival to be inactive. A batch of rabbits was then immunized against sheep cells, and on July 7th, 1921, the serum of one of the rabbits gave a titre of 1/3000.

The Wassermann was started again and remained satisfactory until September 9th, 1921, when the amboceptor lost hæmolytic power. During the latter part of this period a second batch of rabbits was being immunized and the Wassermann reaction was only delayed to September 28th, 1921, when we were able to recommence it. This amboceptor remained active until November 14th, 1921. At this time Messrs. Burroughs and Welcome sent out a sample of "Soloid" anti-sheep amboceptor. This was tried on November 23rd, 1921, and proved excellent. Unfortunately the whole sample was used, and the Wassermann then stopped till the end of the year. With the equipment, the staff, and the time available, it was found to be impracticable to continue immunizing rabbits. As the rabbits frequently die in process, a batch of at least six must be commenced with if one of high titre is to survive. The immunization of such a batch requires a weekly injection of at least 20 *c.c.* sheep cell for six weeks and to throw this quantity down and to wash it three times with two two-bucket hand centrifuges takes more time and labour than is available. We are waiting for a further supply of "Soloid" amboceptor before starting the Wassermann reaction again.

Formalin Reaction.—1,186 serums were tested with the Formalin reaction, but this reaction was abandoned as it did not prove satisfactory.

The Sachs-Georgi Reaction.—Owing to the difficulties of maintaining the working of the Wassermann reaction, the Sachs-Georgi reaction was used throughout the year as a routine blood test. 2,508 serums were tested by this reaction and on these serums 5,439 tests were performed. The difference in numbers between serums and tests is explained by the fact that a great deal of experimental work was done with different antigens, each serum being tested with at least two antigens.

Examinations for Spirochæta Pallida.—As available artificial lighting was unsatisfactory, all dark ground illuminations had to be carried out in the open, using the sun as an illuminant. The eye strain under these conditions is considerable and not more than six examinations can be carried out at a time without giving the observer a severe headache. During the year 165 such examinations were made.

Cerebro-Spinal Fluid.—Only two cerebro-spinal fluids were examined for cells, globulin, etc. A Wassermann and Sachs-Georgi reaction were done on both.

B. Gonorrhœa.

Complement fixation.—This was tried on one batch of serums at the end of the year, but was not successful

Examination of Slides.—183 slides were examined for the gonococcus.

Marriage tests.—10 marriage tests were performed on Europeans.

Urines.—24 urines were examined microscopically and by culture methods for the gonococcus.

Vaccines.—10 strains of gonococci were isolated and a stock vaccine made. A mixed vaccine was also put up of other secondary organisms cultivated from urethral or prostatic pus; these included diphtheroid organisms, B.C.C., staphylococci and a number of diplococci other than gonococcus. No autogenous vaccines were made. The labour of making vaccine in bulk is very considerable, when all the washing has to be done with small hand centrifuges and all the shaking by hand.

C. Soft Sores

Apart from dark ground illumination of suspicious sores no work was done on soft sores.

D. Recommendations and Conclusions.

Mulago Hospital had an average daily attendance of 200 to 250 out-patients. To control treatment, to establish diagnosis, and to be assured of cure, every sore should be examined by dark ground illumination, every urethral discharge should be examined for gonococci, every case of gonorrhœa showing apparent cure should be tested culturally, and every syphilitic should have his blood tested at regular intervals. Stock and autogenous vaccines should be available at all times. To do this the laboratory building must be of adequate size, and the services of a whole time competent European laboratory assistant are essential. Tap water supply, adequate lighting and electric power are very necessary to the smooth and successful working of a venereal laboratory.

From a detailed consideration of the case records and blood test results, I am forced to the conclusion that the routine treatment of primary and secondary syphilis as practised here is not adequate. It is possible in 70% of cases to induce a syphilitic native to attend hospital for three to four months and possibly to return for a short second course. The routine has so far been to exhibit mercury, intravenously or intramuscularly as the main drug. A course of twelve weeks consists of twelve injections of some form of mercury with perhaps two injections of ·3 grammes Salvarsan substitute. From the investigations carried out, I consider that if less than 2 grammes of Salvarsan substitute is given in the course, the treatment will prove ineffective in a large number of cases. I recommend that as a general routine Salvarsan substitute be given to all cases of Syphilis I and II every week for the first eight weeks of treatment, and every second week after that until they cease attendance. This is only to be regarded as a general scheme and would naturally be altered or modified to suit individual cases. I do not think it good policy to charge primary and secondary syphilitics for Salvarsan substitutes. Such a policy of insisting on payment for each dose merely interferes with the sick receiving an adequate amount of treatment and tends always to diminish the attendances and thus interfere with treatment. This cannot, in my opinion, be recommended as a sound policy for adoption.

W. LESLIE WEBB,
Medical Officer i/c Laboratory, Mulago.

Appendix XI.

Mercuric Cyanide solution used for routine intravenous injection is prepared as follows :—

R x Mercuric Cyanide	grains 96
Sodium Chloride	„ 14
Sodium Citrate	„ 9
Distilled Water to	ounces 10

10 minims of this solution equals	1/5 grain H_gC_n
Normal maximum dose for natives	1/5 grain
5 minims maximum dose equals	1/10 „
15 minims maximum dose equals	3/10 „
Normal dose for Europeans and Asiatics ...	3/10 „

Cost of course of treatment now recommended :—

3 grammes Salvarsan substitute, 2½ to 3 grains Mercury ... 30/-

Appendix XII.

LUWALO DEPARTMENT,
MENGO LUKIKO,
15TH DECEMBER, 1921.

SIR,

I have received a letter from chiefs in Buyaga requesting that a venereal hospital may be put up in their Saza by Luwalo.

2. They point out the enormous number of syphilitic cases that exist in their Saza and beg that their application may be considered as soon as convenient.

The Lukiko is prepared to do their usual share of work should you be in a position to attend to their request.

I have the honour to be,
Sir,
Your obedient servant,
J. M. W.
Provincial Luwalo Inspector.

Appendix XIII.

	NEW CASES.		TOTAL	OLD CASES.		TOTAL	TOTAL ATTENDANCES.		TOTAL
	M	F		M	F		M	F	
Syphilis I and II ...	608	321	929	10,042	4,665	14,707	10,650	4,986	15,636
Sy. III and Latent Sy. ...	284	236	520	3,187	2,147	5,334	3,471	2,383	5,854
Congtl. Sy. ...	84	130	214	674	658	1,332	758	788	1,546
Gonorrhœa ...	613	64	677	6,940	353	7,293	7,553	417	7,970
Other Venereal Diseases ...	106	20	126	639	86	725	745	106	851
Ante-Natal ...	—	106	106	—	273	273	—	379	379
Non-Venereal Disease ...	703	143	846	72	27	99	775	170	945
Examinations ...	1,890	940	2,830	—	—	—	1,890	940	2,830
TOTAL ...	4,288	1,960	6,248	21,554	8,209	29,763	25,842	10,169	36,011

Note.—Of the total of 36,011, only 3,500 had been seen by the end of May, 1921; the remaining 32,500 attended during the last seven months of the year, with a monthly average of 4,600 and a yearly average of over 50,000.

TOTAL ATTENDANCES FOR THE YEAR OF OUT-PATIENTS.

	Syph. I.	Syph. II.	Syph. III.	Congl.	Gon.	Soft Sore.	Other V.D.	Non-V.D.	Ante-Natal	TOTAL
In-patient days aggregate ...	590	6,496	2,204	604	1,436	4	496	107	24	11,961
Average days each patient ...	34·7	28·6	38·6	30·2	23·5	1	27	10·7	24	28·8
Patients remained from 1920 ...	0	0	0	0	0	0	0	0	0	0
Patients admitted ...	17	227	57	20	61	4	18	10	1	415
Patients remaining 31st December, 1921 ...	3	51	13	3	11	1	8	2	0	92

In-Patient Record.

Average daily number of patients in hospital for the eight months of the year during which in-patients were admitted—48. Average daily number in hospital in last month of the year was over 100.

Appendix XIII.

	Primary Syphilis		Secondary Syphilis.		Tertiary Syphilis.		Latent Syphilis.		Congenital Syphilis.		Soft Sore.		Gonorrhœa.		Stricture.	Ante-Natal.	Yaws.		Granuloma Venereym		Non-Venereal.		Total.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
1. Number of persons who on January 1st, 1921, were under treatment or observation for...	...	...	...	...	...	...	...	...	...	..	...	..	...	...	...	...	...	...	...	..	...	...	...	...
2. Number of persons dealt with during the year at the Out-patient Clinic for the first time and were found to be suffering from:—																								
Syphilis only	95	3	493	305	267	221	13	19	84	130	...	...	...	...	...	...	...	...	..	...	...	...	952	678
Soft Sore only	...	...	...	...	...	...	...	...	...	...	56	11	...	...	...	...	...	...	...	...	...	...	56	11
Gonorrhœa only	...	...	...	...	...	...	...	...	...	...	...	...	383	48	191	...	...	...	...	...	...	...	574	48
Syphilis and Soft Sore	...	...	2	1	1	...	...	...	...	...	3	1	...	...	...	...	...	...	...	...	...	...	6	2
Syphilis and Gonorrhœa	15	...	20	16	10	...	...	...	...	...	...	...	45	16	...	...	...	...	...	...	...	...	90	32
Gonorrhœa and Soft Sore	...	...	...	...	...	...	...	...	..	...	5	...	5	...	...	...	...	...	...	...	...	...	10	...
Syphilis, Soft Sore and Gonorrhœa ...	...	...	3	...	...	...	...	...	...	...	3	...	3	...	...	...	...	...	...	...	...	...	9	...
Other Diseases	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	106	17	3	8	1	2,610	1,087	2,635	1,197
Total Item 2 ...	110	3	518	322	278	221	13	19	84	130	67	12	436	64	191	106	17	3	8	1	2,610	1,087	4,332	1,968
Total Items 1 and 2 ...	110	3	518	322	278	221	13	19	84	130	67	12	436	64	191	106	17	3	8	1	2,610	1,087	4,332	1,968
3. Number of persons who ceased to attend the Out-patient Clinic:—																								
A. Before completing a course for ...	55	2	179	96	48	54	1	9	16	48	6	2	91	17	45	21	4	...	4	...	...	...	449	249
B. After completing a course of treatment but before final tests for ...	12	1	38	26	152	110	10	8	46	58	1	...	145	7	63	69	...	...	...	...	...	...	467	279
4. Number of persons transferred to other Treatment Centres for treatment of	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	670	89	670	89
5. Number of persons discharged after completion of treatment and observation for	...	...	...	...	...	...	...	...	...	...	53	9	149	28	34	...	6	2	1	...	1,932	994	2,175	1,033
6. Number of persons who on 1st January, 1922, were under treatment or observation for ...	43	...	301	200	78	57	2	2	22	24	7	1	51	12	49	16	7	1	3	1	8	4	571	318
Total Items 3, 4, 5, and 6 ...	110	3	518	322	278	221	13	19	84	130	67	12	436	64	191	106	17	3	8	1	2,610	1,087	4,332	1,968

	Primary and Secondary Syphilis.		Tertiary and Latent Syphilis.										Examination.					
	Male.	Female.	Male.	Female.									Male.	Female.				
7. Total attendances of all persons at the Out-patient Clinic who were suffering from	10,951	5,016	3,550	2,493	758	788	792	106	7,822	417	...	379	1,890	940	777	170	26,540	10,309
8. Aggregate number "In-patient" days treatment given to persons suffering from	4,301	2,785	1,213	991	324	280	4	...	1,175	261	...	24	...	...	387	216	7,404	4,557

	Intramuscular Mercury.	Intravenous Antimony.	Intravenous Mercury.	Intravenous Arsphenamine.	Total Intramuscular.	Total Intravenous.	TOTAL.
9. Injections	5,512	1,103	3,861	1,098	5,512	6,062	11,574

Appendix XIV.

Deaths.

Disease.	*No.*	*Cause.*
Not yet diagnosed ...	1	Not yet diagnosed.
Syphilis, Primary ...	1	Pneumonia.
Syphilis, Secondary ...	8	3 Acute Yellow Atrophy. 1 Debility. 2 Exfoliative Dermatitis. 1 Syphilis.
Syphilis, Tertiary ...	1	Mercurial poisoning.
Congenital Syphilis ...	3	1 Plague. 2 Marasmus.
Strictur and Retention of Urine ..	3	Septicæmia following extravasation.

INDEX TO ANNUAL REPORT ON VENEREAL DISEASE MEASURES.

PAGE.
A. SUMMARY. 59
B. GENERAL REVIEW OF WORK DONE 61
C. DETAILED REVIEW 62
I. Receipts 62
II. In-patients 62
III. Results of treatment ... 63
IV. Defaulters in attendance – Clerical Work 63
V. Water 64
VI. Light 64
VII. Conservancy 64
VIII. Stricture, Retention and Extravasation of Urine 65
IX. Auxiliary Centres ... 65
X. Salvarsan Substitutes (Arsphenamine) 65
XI. Legislation 66
XII. Proposals for extension of scope of v.d. measures by grant of facilities for v.d. treatment to voluntary hospitals 66
XIII. Female attendance ... 67
XIV. Standard of cure ... 68
XV. Motor Ambulance ... 68
XVI. Propaganda 68
XVII. Compulsory Examinations ... 68
XVIII. Prevalence of Venereal Disease ... 69
XIX. Buildings 69
XX. Pathological Report ... 69
XXI. Existing Government Dispensaries and v.d. Treatment ... 69

PAGE.
D. CONCLUSIONS 69
E. RECOMMENDATIONS 73
F. ACKNOWLEDGMENTS 73

APPENDICES:—
I. Time Table 74
II. Native representations *re* payment 74
III. Cost per bed at Mengo Hospital ... 75
IV. Analysis of results of treatment—Dr. W L. Webb 75
V. Operations performed ... 78
VI. Letter to S.M.O., Mengo Hospital, and M.O., Nsambya Hospital ... 78
VII. Outline of plan for grants to Missions for venereal disease work showing returns required from voluntary hospitals 79
VIII. Graph of proportion of female attendances 83
IX. Statement of buildings and fittings carried out 83
X. Pathological Report—Dr. W. L Webb 84
XI. Mercuric Cyanide solution used for routine intravenous injections ... 86
XII. Application for extension of anti-v.d. measures in Mubendi District ... 87
XIII. Returns of all attendances ... 87
XIV. Returns of Deaths 89

APPENDIX No. IV.

Bacteriological Laboratory Report.

This report for the year ending 1921 is of necessity very brief and incomplete owing to a portion of the staff being absent on leave, including the Bacteriologist. It therefore merely covers the routine work and other miscellaneous examinations carried out during the period from April to December.

Bacteriological.

The specimens received under this heading included :—

Tissues for histological exam.	7
Blood films	40
Pus films, etc.	18
Puncture fluids	14
Widals, etc.	10
Throat swabs...	2
Sputa	16
Urines	5
Fæces	19
Gastric contents	1

At the request of the Township Authorities an investigation of the water-supply and the bottled waters of a " mineral water " factory established at Entebbe was carried out. The results showed that the water employed was contaminated, and that the method of filtering did not produce a water of satisfactory bacterial purity. A method for chlorinating the water was suggested, and has since been instituted. On further examination this has proved quite effective.

Samples of the spring water and also of the lake water were examined and in every instance the results indicated pollution. This is not surprising considering that in the case of the former the "gathering-ground" includes the manured grounds of the Botanical Gardens, whilst the latter receives all the subsoil and surface water from the rising ground upon which the Entebbe township is situated, together with the excreta of natives and cattle which is deposited on the lake shore.

Chemical.

In the matter of analytical work, the activities of the laboratory have been very limited owing to want of adequate accommodation and apparatus. The specimens received for analysis have been mostly pathological ones, and the remainder of a miscellaneous nature including three medicolegal investigations.

Several samples of drinking water have been examined at the Laboratory but in each case the chemical work has been confined to determining the chlorine absorption figure and the action of free chlorine on the bacterial content. In this branch we hope soon to be fully equipped to deal with investigations on a more extensive scale.

Vaccines.

The production and distribution of calf-lymph continues to be satisfactorily maintained, 207,055 doses having been issued during the year. Great difficulty has been experienced in obtaining a supply of suitable calves, and many animals received at the laboratory have had to be rejected owing to their poor condition.

The demand for prophylactic and autogenous vaccines is steadily increasing.

The manufacture of plague vaccine is contemplated in the new year.

Miscellaneous.

Owing to the absence on leave of Dr. Duke, active experimental work on trypanosomiasis has had to be suspended except for the maintaining of important strains by passage through monkeys and the recording of certain data in connection therewith.

Other research work has also been in abeyance during this time.

At the request of the Principal Sanitation Officer the investigation of rats for plague infection was undertaken. Out of 371 rats received 4% were found to contain *B. pestis.*

M. MARTIN,

Assistant Bacteriologist.

APPENDIX No. V.

Report of Senior Medical Officer i/c Sleeping Sickness for 1920-21.

I. The first necessity on taking up my appointment in September, 1920, was to acquire a first-hand knowledge of the conditions in the enormous area for which I became responsible.

Consequently as soon as affairs could be arranged I started on safari, visiting first the Katwe Sleeping Sickness area: this occupied from October, 1920, to January, 1921.

In February the islands Bulago and Kimmi were visited to initiate what it is hoped will be an adequate test of the method of attacking *Glossina* by enticing it to deposit larvæ in artificial breeding places where the pupæ can subsequently be searched for and destroyed.

From the islands I went to Jinja, and thus to the Mpologoma Sleeping Sickness area of which, and of the Siroko Valley area, a very thorough examination was made. I returned to Entebbe at the end of April.

In June a complete tour of the re-occupied Sese Isles was made, to ascertain if any of the repatriates had become infected. At the request of the Reclamation Officer I also visited Buvuma Isle and Grant Bay in order to select safe landing places for the repopulation of the island.

At the beginning of July I commenced a safari which lasted five months, examining first the Buamba valley and the Semliki plains, and then the coast of Lake Albert which was surveyed by canoe between the mouths of the Victoria Nile and the Wasa river. I then went by steamer to Port Liri and made a complete circuit of the East Madi country followed by a similar tour in West Madi.

A visit was made to the Sleeping Sickness Camp at Kajo-Kaji in the Sudan and much valuable information gained from the Medical Officer in charge. I next went to Arua and from there to Mutir and along the river to Panyamur, thence back to Entebbe, which was reached in December.

II. *Summary of work done.*

The main object of the tours has been to ascertain for myself what was the amount of Sleeping Sickness, whether any parts of the large areas now closed could be opened under permits which could be withdrawn if the conditions imposed were not observed, and whether the boundaries of the closed areas might not be in places safely altered so as to remove from the ban areas now unnecessarily included. The point of view has been that, especially where fishing is concerned, the present regulations are not working well. Natives *will* trespass into forbidden areas to obtain fish: it seems better therefore to make a virtue of necessity and by opening certain parts on condition that necessary clearing is kept up, make it possible for the natives legally and in safety to obtain what otherwise they procure surreptitiously and in danger.

A. The Katwe Area.

The route taken was from Fort Portal to Lake George, where preliminary investigations were made, then to Katwe salt lake and the Lubilia river.

I returned to Lake George and spent about 10 days in examining its coasts and islands and then went down the channel to Katunguru, and examined the country in the neighbourhood of the Ankole bank. Then to Kazinga village at the Lake Edward mouth of the channel on the Ankole side, and down the coast of the lake to Kanyamwongo in the Kigezi District. From there the coast was further examined, and a safari made through the uninhabited country in the neighbourhood of the Ntungwe river, whence I returned to Entebbe *via* Mbarara and Masaka.

Miles travelled	590
No. of people examined :—Males	585
Women and children . .	641—Total 1,226

(in the neighbourhood of Lake George the Kazinga channel and north coast of Lake Edward).

New cases of Sleeping Sickness found 3

ACTION TAKEN ON REPORT.

1. A large area on the west coast of Lake George, and the island of Irangara opened by permit under certain conditions.
2. A ferry route for salt traffic opened across Lake George from Kasenyi to Mahyoro in Kitagwenda by permit under certain conditions.
3. Katungulu ferry across Kazinga channel given up as the main route for salt from Katwe to Ankole and a safer and shorter route substituted across the Lake Edward mouth of the channel to Kazinga village, which is open by permit under conditions.
4. Extensive clearings done on the banks of Katwe salt lake and the Lubilia river.
5. A watering place for cattle opened by permit on the north coast of Lake Edward between the Lubilia and Nyamagasani river.
6. The Sleeping Sickness boundary in the Kigezi District slightly altered so as to free a small area; but it was thought quite inadvisable to open the Kigezi coast of Lake Edward as desired by the Administration.

B. The Mpologoma Area.

This has long been a difficulty. Although the country within one mile of the water was forbidden, it proved impossible to prevent natives visiting it for fishing and surreptitiously cultivating in old shambas. Consequently numerous cases of Sleeping Sickness were reported, and my predecessor, Dr. Marshall, raised again the question of clearing and cultivating the banks on the Bukedi side. This has been actually commenced, but lapsed during the war.

Dr. Marshall engaged Mr. Chas. O'Connor to supervise the work, and when I went there I found that most excellent and thorough work had been done and the scheme was most promising; it is impossible to speak too highly of the value of Mr. O'Connor's services and his patient encouragement and supervision of the natives. Approximately fifty miles of the coast have been put under cultivation for a distance of about 200 yards back from the water, which has necessitated clearing forest and bush of the densest and thorniest character.

The route taken was from Jinja to the Namwiwa-Buseta ferry and then southwards along the Busoga shore of the Mpologoma across the Luamboga river to Busia, the neighbourhood of which was examined, and a visit paid to Mjanji port. From Busia to Teba's, whence the Busitema country lying south of the Malawa river was examined and cases of Sleeping Sickness found.

Thence I proceeded up the Bukedi shore of the Mpologoma and round the whole of the Namatala swamp up to the northern boundary of the Sleeping Sickness area.

Miles travelled ...		... ...	500	
No. of people examined :—	Busoga—	Men	571	
		Women ...	845	
		Children ...	677	—Total 2,093
	Bukedi—	Men	3,467	
		Women ...	6,145	
		Children ..	5,301	—Total 14,913
New cases of Sleeping Sickness found :—				
	Busoga	... ...	Nil	
	Bukedi	... ...	5	

As a result of the tour the whole of the shores of the Namatala area of the Mpologoma, and large areas on the Bukedi shore of the Mpologoma were opened by permit on condition that the clearing and cultivation so well initiated under Mr. O'Connor's supervision were kept up. Subsequently the people responsible for certain parts, in particular the neighbourhood of Terinyi ferry, have found themselves unable to continue the keeping up of the clearing, so that certain permits have been withdrawn. It is confidently expected that these measures will greatly reduce the risk of Sleeping Sickness and also result in a supply of food from the neighbourhood of the water during times of drought when other crops fail. Moreover, it is now possible for natives to obtain fish legally and without risk.

This reclamation work has been greatly helped by the map, scale one inch to the mile, very carefully drawn by Mr. O'Connor from his own survey.

C. *The Siroko Valley Area.*

This area is inhabited, since the *palpalis* present there has never been proved infected.

Since examination of 1,027 persons (males 256, women 429, children 342) failed to reveal any cases of Sleeping Sickness, it is presumed that the conditions now obtaining require no alteration.

D. *The Toro Sleeping Sickness Area.*

Route Taken—The Buamba valley was entered at Buyayu, below Musandama camp on Ruwenzori. I then proceeded down the valley past Buranga hot springs to Bweramule ford over the Semliki and followed the Semliki down to a point about 15 miles above its mouth; I then struck eastwards across the plains and the Wasa river to Ntoroko.

Miles travelled	125

Number of people examined :—

Endeavours to collect natives for examination failed as the chiefs said the people would not come.

Only sixty were examined at Buranga.

Action taken on Report.

The very large Sleeping Sickness area containing much open coutry quite free from *Glossina* has been greatly diminished. The Buamba forest and the neighbourhood of the Waki River must still be closed, but the Buranga springs in the closed area are open by permit under certain conditions.

The whole of the open plain of Butuku between the Semliki and the Wasa rivers has been removed from the ban.

E. *The Coast of Lake Albert.*

The whole coast between the mouths of the Victoria Nile and the Wasa river has been closely examined by canoe safari and from the "Baker," but not all on one safari. Particular attention was paid to the suggestion that Bulinda bay was a better port than Ntoroko, but it was found to be objectionable from a medical standpoint.

Miles travelled in canoe or on foot 125

The whole coast of Bugungu has been thrown open for fishing, and part of it, north of the Waiga river, is opened for habitation for a space of five miles back from the coast. The Sleeping Sickness boundary which cuts through Kibero has been moved about a mile to the southwards to open a bigger area in the neighbourhood of the village.

Parts of Kyso and Tonia and the whole of Buhuka were opened by permits for fishing and occupation. A total area of about 50 miles of the coast has been opened for fishing.

F. *The Waki River Area* was examined, and representations made to the District Commissioner that certain encroachments had been made.

Number of people examined :—

I found one case of Sleeping Sickness among 68 local inhabitants and 129 labourers at the brickworks. The District Medical Officer, Masindi, arranged for a general round up of the people near the Waki and found no cases among 459.

G. *The Madi and West Nile Districts.*

Route taken.—A complete circuit was made of East Madi from Port Liri to Patchara, and of West Madi from Laropi to Dufile *via* Amua, Moyo and Metuli, and thence to Gimarra; from Gimarra to Arua and along the Nile to Panyamur.

Miles travelled 410

NUMBER OF PEOPLE EXAMINED.

	Men.	Women.	Children.	Total
East Madi	2,474	2,529	3,957	8,960
West Madi	3,554	4,242	7,604	15,400
West Nile	2,389	3,420	3,384	9,193
TOTAL ...	8,417	10,191	14,945	33,553

Number of cases of Sleeping Sickness found :—

East Madi ... 118 = 1·3% (at certain localities 4% of the population were infected).
West Madi... 124 = ·08%
West Nile ... 13 = ·01%

ACTION TAKEN ON REPORT.

A large area in East Madi is being evacuated and the people moved nearer the Nile. The area concerned lies South-West of Boroli as far as Oyuwi and Eranga, and embraces Palaro, the road through which into Gulu must be closed. The main route from Gulu should be the Northern one *via* Zaipi where the new headquarters for East Madi should be.

In West Madi the Aiyu valley on the frontier is to be evacuated and the people concentrated to the east of Metuli; Moyo to be the headquarters.

The Madi district to be maintained as a strictly closed area.

In the West Nile district all roads where they cross streams to be protected by clearing for 100 yards above and below.

An inspector to be stationed at Panyamur to prevent infected persons leaving the district to work elsewhere.

H. *The Islands of Lake Victoria.*

In June three-quarters of the population reinstated on the Sese Isles were examined and found free of Sleeping Sickness. The total number examined was about 1,600.

SUMMARY.

Total distance travelled, exclusive of journeys in motor vans, railways and steamers	about 1,750 miles.
Total number of people examined	54,600
Total number of Sleeping Sickness cases found ...	264

(255 of which are in Madi and West Nile district)

III. *Future Work.*

It is my intention in January to commence a safari for the thorough examination of the Gulu and Chua districts which have not as yet been reported upon in their entirety: the situation in Gulu appears to call for action on a large scale as in Madi, and probably it will be necessary to evacuate some places so that by concentration of the people other areas may be made safe by clearing.

The Bunyoro Sleeping Sickness area has not been fully examined, and I propose to deal with this after Gulu. In it is the Budongo forest around which the Chief Forestry Officer is anxious to allow his labourers to settle and cultivate. Until I have examined the area it is impossible to say whether settlements can be made with safety.

The District Commissioner, Masindi, is anxious to open a route from Masindi to Foweira, and the Superintendent of Marine, Namasagali, is anxious to cut fuel at Foweira. These questions and the proposed port at Kamdini all call for attention in the coming year.

The closed area on each side of the Victoria Nile between Jinja and Namasagali has not yet been examined, but no questions have arisen concerning this area.

IV. *Recommendations.*

At the present moment the Lake area is not under the control of the Senior Medical Officer, Sleeping Sickness, but he is concerned with all other Sleeping Sickness areas.

The Madi district is the most pressing concern at the moment, and the work there is quite beyond the powers of the District Medical Officer, Gulu, or Arua.

It was found necessary in the Sudan, at Kajo-Kaji close to the Uganda frontier, and in the Yei district, to appoint special Medical Officers for Sleeping Sickness work only, who are in charge of camps for segregation and treatment. These camps, however, necessitate prolonged residence, for the treatment which has there been found by experience to be the best, requires 2½ years, and it is very doubtful whether the Madi, and especially the Alur of West Nile, could be kept in the camps by anything short of an armed guard.

The treatment by salvarsanized serum or modifications thereof seems eminently suitable, as each case only requires about 48 hours' detention and is then free to return to his home. As regards the danger of an infected person being at large, the present experience seems to show that after this treatment the peripheral blood is so quickly sterilized that the danger of infecting *Glossina* may be regarded as negligible.

I would therefore press for the application of this treatment as the most suited to the conditions.

It is absolutely essential in order to combat the Sleeping Sickness in Madi that a special Medical Officer be given me for this work alone. Every person in the district should be examined quarterly as is done in the Kajo-Kaji and Yei districts in the Sudan and since every stream is fly infested a white inspector is necessary to supervise the clearings which must be wide-spread.

Only by these means can the grave condition now obtaining be remedied.

It must ever be borne in mind that in the Madi district *Glossina morsitans* has been actually caught in an area infected with Sleeping Sickness together with *Glossina palpalis* and even at the same spot on the same stream.

The risk is great that a *morsitans* may one day pick up *Trypanosomes* from a person infected with *gambiense* which may be able to establish themselves in *morsitans* as the form *rhodesiense*. From evidence recently published (October, 1921) this appears to have been the case in Nyasaland.

Should *morsitans* become so infected in Uganda the prospect would be indeed appalling for the Protectorate.

New Rules and Regulations.

For some years past revised regulations have been needed, but it was felt that I should become more familiar with the conditions obtaining in Uganda generally before attempting the difficult task of combining in one the suggestions carefully thought out by Mr. Fiske for Lake Victoria and others more suited to the rest of the infected areas.

It has been an extremely laborious and difficult task for all concerned, and one requiring frequent consultation and discussion with Mr. Fiske, Mr. Mackenzie, and other administrative officers, but it is hoped that the Sleeping Sickness Rules of 1922 will prove more practical than the old ones. They are based on one of many drafts by Mr. Fiske and in many ways are less stringent than the old rules but in some ways more so.

For their successful use the heartiest co-operation of the Administration is essential; it is hoped that officers may be definitely set apart for Sleeping Sickness dutes and I venture to suggest that one would find enough to occupy him in looking after the areas on Lake Albert and the other lakes to the South, and that another is required for the Nile and the districts on each side, while the District Commissioner, Bukedi, will probably find that the Mpologoma area will require a whole-time Sleeping Sickness Officer.

G. D. HALE CARPENTER, M.B.E., M.D., F.L.S.,

December 31st, 1921. *Senior Medical Officer, Sleeping Sickness.*

Note by the Principal Medical Officer.

Re recommendations in IV above. In view of the decision not to send out a Special Commission for the treatment of Sleeping Sickness, arrangements have been made for a Medical Officer to be seconded temporarily for this duty in 1922. Dr. Marshall will initiate him into the treatment and it is hoped (1) that every case (less a certain number of controls) will receive the treatment advocated by Drs. Marshall and Vassallo within the next few months, (2) that it will be possible to detail this Medical Officer more or less permanently for duty with Dr. Carpenter (and carry on his work next year when he goes home on leave) as the quarterly examination of those treated and also of the general population in Madi will be necessary for some time to come.

The appointment of a European Sleeping Sickness Inspector for the Northern Province has been sanctioned for 1922.

A second Medical Officer for the Victoria Lake area is essential now that Sleeping Sickness has recurred to a somewhat alarming extent in North Kavirondo as regular examinations of all fishermen and others repatriated on the lake shore and Islands *must* be made and the District Medical Officers cannot undertake this duty outside the townships.

Dr. Carpenter's recommendation as to Officers for Sleeping Sickness duties is one that should be most carefully considered, and I hope that it will be found possible to detail special men for these posts.

C. A. WIGGINS.

APPENDIX No. VI.

Sir,

I have the honour to submit to you my Annual Dental Report for the year 1921.

The following Tables will show the Dental Treatment of Officials; you will note there is a considerable increase in the amount of work done due to the greatly augmented staff:—

(1) Appointments	743	Officials treated	294

(2) The following conditions were treated :—

Caries simplex	481	Odontalgia	9
Extractions	91	Periostitis	26
Pulpitis	56	Erosion	34
Abscess	18	Stomatitis	5

(3) Conservative work :—

Synthetic porcelain and cement	132	P. Gutta Percha	29
Ag. Amalgam	363	T. Gutta Percha with dressings	131
Cu. Amalgam	11	Scaling and cleaning	146
		Ag. No. 3 applications	41

(4) Prosthetic work :—

Dentures	37	Crowns	20
Repairs to Dentures	51		

(5) The following stations beyond Entebbe and Kampala were visited :—

	No. of visits.		No. of visits.
Masaka	1	Jinja	3
Mubendi	2	Mbale	1
Fort Portal	2	Soroti	1
Bombo	2	Lira	1

I have the honour to be,
Sir,
Your obedient servant,
G. STANLEY BATEMAN,
Government Dental Surgeon.

The Hon'ble,
The Principal Medical Officer,
Uganda.

APPENDIX No. VII.

A Report on Plague in the Bukedi District.

A.—Part played by rats.

1. The first time rats were noticed in any great numbers was during 1918, previous to the famine, in a shop at Mjanji, the owner of which had imported a good deal of rice for retail from Kisumu and from other parts of Kenya, but as far as could be ascertained the rat was not the "Nsolima." The definite appearance of the Nsolima in the district was in 1919; it first appeared in Mjanji and was brought over in bags of rice which were sent over to this district for famine relief. The native idea is that the Nsolima came over from Kisumu, but it is more probable that it came over from Jinja where the bulk of the rice came from.

2. The Nsolima has been incriminated, and rightly so, as the plague rat of the greatest importance. The possible reason for this is that the Nsolima lives in more direct contact with man than other rats, and the field rats and mice are therefore of less epidemiological importance. The outbreak at Budaka (1908) was, however, caused by "Lubende," at which place this rat is still to be found, and also the epidemic in the Southern part of Budama (Nyimera and Nagongera) about 1911-12. The bigger and stronger Nsolima has more recently driven the Lubende out in Budama, where it is now only a field rat. It is still however a real danger, as should the Nsolima be exterminated the Lubende will probably re-enter houses and huts and again become a plague carrier.

3. From a recent rat survey held in this district the Nsolima, it appears, is only to be found in Samia, Bugwe, Budama, and Mbale. A few have been discovered in Bunyuli, but none in Bugweri, Pallisa or the Bugishu hills. The reason for this geographical distribution can to a great extent be given, and here again the Nsolima has followed the track of the rice famine. The rice for all the counties excepting Pallisa arrived at Mjanji; for Pallisa at Lusinga. A good deal of the rice for Budama and Mbale was brought up in hamali carts in bags, and

with it the Nsolima. At Mbale and Pallisa the bags were opened and distributed in smaller parcels or loads and thence sent out to distributing centres. The rat escaped when the bag was opened. The same procedure was also to a great extent adopted for the Bugishu hills and fewer rats would be carried up. It is also probable that under the then existing conditions any rats seen would be killed, and also that owing to the famine the rats would congregate where food was more abundant. Mjanji would probably be the best place for them as it was the port of disembarkation of the biggest bulk of the food.

4. The more extensive cultivation of cotton in this district has provided the Nsolima with undoubted facilities for thriving. Apart from the fact that the cotton offers a very good nest, the cotton seed provides excellent nourishment, and in Nsolima and other house rat nests, the cotton seed is very much in evidence, and examination of the cotton seed shows that all the nutritive centre is eaten, nothing but the shell remaining. In Budama also, other facilities are afforded the rat as the Badama are a grain eating race. The natives state that it is very difficult to dislodge the rat once it has found grain and cotton seed, especially the latter, also that the Nsolima being the stronger rat, under these conditions drives the other rats away. This is very probably true, as the figures collected from Budama during a recent rat survey show this rat to be in great predominance, while previous to the advent of the Nsolima, musonse and emende were the usual ones.

5. The entrance of the Nsolima into Bunyuli is very probably *via* Budama, and if so the immigration is in its inception and from all reports there are at present very few Nsolima there. Another supposition of the entry of the Nsolima, according to the chiefs, is that it was carried in by hamali carts from Mbale when taking in cotton for ginning. Both paths have, probably, helped because there are four localities in Bunyuli on the Budama side near Mulanda and two others a fair distance away, Busolwe and Busabi, from which Nsolimas have been reported, the intervening country being quite clear. The ginnery above-mentioned is at Busolwe.

6. The distribution of the Nsolima in this district is therefore Samia, Bugwe, Budama and Mbale and to a lesser extent Bunyuli. In Samia, Bugwe, Budama and Mbale, the distribution is pretty general; the Bugishu hills have, apart from Lukenge and Busiu, none. The two latter gombololas adjoin Budama, so that the main spread has been along the main road.

7. The rat being in the district, all that was required was the presence of the plague bacillus, and in most cases it can be shown that the outbreaks were either carried in from other infected areas or else the Bukedi district participated in a general wave of plague which started elsewhere.

8. *Budaka Outbreak, 1906.*—This was not, as usually supposed, limited to Budaka. It started at Terinyi and worked up to Kadama, Budaka, and even reached Naboa. It came over from Busoga, across the Mpologoma according to the account of chiefs, inspectors and old inhabitants personally questioned. A stumbling block in this epidemic has been the absence of the Nsolima (nor is there any now): the rat which carried the disease was the Lubende, which rat was also responsible for other outbreaks. The probable reasons why the Nsolima is now the more frequent plague carrier have already been stated.

9. *Budama Outbreak, 1912.*—This also came from Busoga. A ferry plies between Nyimera (Budama) and Bulugwe (Busoga). In 1912 three Somalis crossed over to Budama from Busoga *via* this ferry, one of them was taken ill and two days later died of plague (one of these Somalis is still alive and lives at Mulanda, and the information he gives tallies with that obtained from other sources, *e.g.*, chiefs, etc.). The outbreak in this case dated from the death of the Somali, and here again the rat involved was the Lubende.

10. *Present Outbreak, 1920-21.*—This is the one which has been intimately connected with the famine. It started in May, 1920, at a place called Sidukumi (Bugwe), and thence spread to Bugwe and Samia and to a less extent to Budama. All are positive that there had previously been no plague and that there had previously been no Nsolima. The course of the Nsolima, its penetration into free areas and the reason for its present geographical distribution has already been attempted. The history of the epidemic is also quite clear. Three men, all

Kavirondo, crossed over from Kenya in May, 1920; one went to Sidukumi, where he died five days later, and another to Lumino, where he also died. The third man could not be traced. From the description of the disease both deaths were obviously due to plague, and it was from the death at Sidukumi that the outbreak dated. Thence the epidemic was simply propagation. The epidemic died out towards the end of the year, *i.e.*, when the rains ceased, and the district was free from plague until February, 1921, when a fresh case, apparently sporadic, occurred at Buwemba in the gombolola of Tororo. It is difficult to connect the Buwemba case with the Bugwe and Samia outbreak. Buwemba is some distance from the Bugwe border, the country between is sparse in population, the village itself is more or less inland, and in 1920 there were no cases there, but it is stated that rats died there in 1920. I am more inclined to believe the explanation brought forward by the chiefs, that a Mukedi crossed the Budama country from Kenya and went to his home in Buwemba, where he died of plague two days later, and I am assured that it is from this date that the epidemic started.

B. *Suppression of the Disease.*

1. All the above considerations throw serious doubts as to whether the disease is epidemic or not in this district; all the epidemics have been shown to have been caused by infected persons entering the district, and all are practically unconnected with each other. The important point is where the disease starts from. I think if the disease were endemic there should have certainly been cases in Bugwe and Samia this year at least, coincident with the Budama outbreak, but the few cases we had this year in Bugwe and Samia were certainly independent.

2. Whether the disease is sporadic, endemic or epidemic there is no doubt as to its being there, and the question of prophylaxis and treatment is perhaps of much greater importance.

Treatment.—This is only of value in sporadic cases, as during epidemics time is much more usefully employed in preventing fresh cases and so saving the able-bodied.

Prophylaxis is of much greater value. (1) *Inoculation.*—This I believe to to be of no value; last year Bugwe and Samia were inoculated twice and in parts three times over, without in any way checking the disease. The same was noticed this year in Budama, and so inoculations were to a large extent discontinued. (2) *Quarantine.*—This is in theory the best, in practice in this part of the world it does not always act; last year it was a failure, this year it was very much more effectual, chiefly due to the efforts of the Acting District Commissioner, Mr. Cox, and I have no doubt that without the unstinted help of the local Administration very little would have been done. In future should there be plague I hope that the chiefs will automatically enforce the regulations.

What has been found to be of utmost value in combating the disease was the evacuation of the infected houses. I suggested to the Principal Sanitation Officer that infected villages should be completely evacuated. The objection to this was that if villages were bodily evacuated rats, in search of food, might and probably would follow the emigrants. We compromised, and instead of the more drastic measure huts were dethatched, the thatching burnt, and small grass huts erected where the natives could go and live, about 200 yards away from the original site. The native was allowed to go and get food from his food store once a day. The original houses were left unoccupied for a month or six weeks. Distinct and marked improvement followed almost at once. These measures were started towards the end of July; during July the number of deaths was 227, in August it was 102, in September 21, and in October 8.

The objects of the dethatching only were threefold: (1) and perhaps the most important, was the removal of the native from the plague-infected flea, (2) there was not much to tempt the rat to follow the emigrants, and (3) rats were indirectly suppressed by removing their nests, which are mainly in the thatching. It is suggestive that in quarantine camps, where at times we had as many as 60 contacts at one time, the cases were few and far between, and this I think is mainly due to the fact that the camps were put near running water, so that all cases and contacts could go and wash down every day; the flea had thus little chance. On the contrary in a small Arab settlement at Kidera (Tororo), where 11 inhabitants lived, six died of plague notwithstanding the fact that the houses where the deaths occurred were burnt. There were few if any rats there, but on examining the people it was found that they were a mass of flea bites. De-ratting alone during epidemics, in my opinion, is not enough; huts need just as much attention as they harbour the infected flea, and during the epidemic rats were being killed without any appreciable effect on its course.

The above-named measures of dealing with huts, I think, presents the most satisfactory means of dealing with plague. This year the work was to a great extent experimental, but if necessary in future years it will be done on an extensive scale. We tried it on two types of infected places, (*a*) the lightly infected, and (*b*) the heavily infected. In both cases it was successful, and it also appealed to the natives, who saw that the disease was really being got under. In heavily infected areas it was done in sections, a day's interval elapsing between the evacuation of each section. Such evacuation, it is needless to say, was only of infected villages and not of isolated houses, which were burnt. Previous to the burning an area was cleared around the doomed hut, and men with sticks killed any escaping rats. Quarantine camps were burnt down every month or so, and in the interval kept clean by frequent washing with Jeyes fluid.

The general sanitation of the infected village is paramount. On tours I used to walk round villages whether they were infected or not, and often I ordered houses to be destroyed if not thoroughly cleaned within 24 hours. Temporary incinerators were erected in the infected villages and temporary headmen were engaged to inspect houses periodically and search for hidden cases. Defaulters were dealt with by the Lukikos as sanctioned by the District Commissioner.

S. M. VASSALLO.

APPENDIX No. VIII.

MBALE DISTRICT.

Annual Medical and Sanitary Report for the Year ending 31st December, 1921.

I. ADMINISTRATIVE STAFF.

The Administrative Staff consisted of the following:—

1	District Medical Officer.	
1	Sub-Assistant Surgeon.	
1	Native Clerk ...	Natives.
9	Dressers ...	
1	Head Plague Inspector.	
8	Plague Inspectors ..	
25	Menial Staff ...	

Dr. S. M. Vassallo was on duty throughout the year until December 14th, 1921, when he handed over to the Sub-Assistant Surgeon on proceeding on leave. Dr. R. G. Griffin took over charge during the evening of the 15th December.

During the plague epidemic five other temporary native inspectors were engaged for varying periods.

Financial.

The following expenditure was sanctioned for the year:—

	£
Native Attendants	192
Plague Inspectors and Vaccinators	373
Native Attendants at Isolation Hospitals and Camps ..	240
Upkeep of Native Hospital	240
Furniture and Equipment of Hospital and Dispensary ...	16
Equipment and Upkeep of Hospital and Camps ...	264
Anti-Malarial Measures	72
Upkeep of Disinfector	10
Contingencies	40
Control of fly-infested areas	40
Sleeping Sickness—Special Investigations ...	30
Bicycle Allowances to Native Inspectors ...	84
TOTAL ...	£ 1,601

II. Public Health.

(A) *General Remarks.*

The general health for the year has been worse than in 1920.

Deaths.—7,887 were reported by native chiefs against 7,600 for the year ending 31st December, 1920. The actual deaths in hospital were 77, as compared with 71 for 1920, the details being as follows:—

	1920	1921
Europeans	2	nil
Asiatics	4	4
Natives	65	73
	71	77

These figures include one Indian treated in quarters near the hospital.

The following are the details of cases treated in hospital:—

Pneumonia	33	Respiratory System ...	33
Plague	33	Digestive System ...	37
Malaria	24	Lymphatic System ...	17
Venereal disease ...	223	Urinary System ...	1
Dysentery	16	Generative Organs ...	37
Suspected S. S. ...	115	Injuries	94
Other infective diseases ...	313	Other diseases ...	197

Malaria has as usual been rife, but not many cases have been treated in hospital.

Blackwater Fever.—There have been 4 cases with one death, all Asiatics.

Sleeping Sickness.—115 suspects were admitted into hospital for examination out of some 10,231 examined in the districts by the Sleeping Sickness Inspector. 12 positive cases were treated, with one death. Practically all cases of suspects sent in with enlarged glands, since my arrival, have had Filaria present in their peripheral blood.

Dysentery.—16 cases with 4 deaths were treated, against 59 with 9 deaths in 1920. One Asiatic, who had been ill for a month without treatment previous to admission, died.

Plague.—For details, especially as regards the epidemic, *see* Dr. Vassallo's special report.

The chiefs reported 1,435 cases with a mortality of 1,070. Rats destroyed were as follows:—

Quarter ending March 31st	Nil
April	3,885
May	100,578
June	112,277
July	225,280
August	93,782
September	93,682
October	249,395
November	224,684
December	45,246
TOTAL	1,148,809

Smallpox.—105 cases with 4 deaths occurred in the district. No cases were admitted to hospital. 46,621 vaccinations were performed and 41,934 were reported as successful.

Chickenpox.—51 cases were returned, and no deaths occurred.

Typhoid.—Two cases of Paratyphoid occurred in the same house in the bazaar, one ending fatally.

Measles.—47,874 cases occurred. I regret I am unable to trace the number of deaths.

Venereal Diseases.

Syphilis.—133 cases were admitted during the year. Treatment with N.A.B. and mercurial injections was carried out; the N.A.B. treatment seems to be much appreciated and is only limited by the amount available. One death occurred.

Yaws.—90 cases were admitted.

Gonorrhœa.—34 cases were admitted for treatment and 2 deaths occurred.

(*B*) *European Officials.*

The health of the European Officials has not been good, practically every one having been on the sick list, and one Official had to be transferred to a healthier station owing to continual attacks of malaria.

Practically all the cases were of malignant tertian malaria. The total number on the sick list during the year was 25, with 183 days loss of duty, as against 18 with 131 days off duty in 1920. No deaths occurred during the year. The concession granted to European Officials, for week-end visits to Walasi, could not be used as often as wished, owing to the difficulty of getting a car in the station; also the walk of two miles uphill is trying for Officials who are seedy. I would like to suggest that, on occasions, when a European Official is not in a fit condition to walk, Lukonge might be allowed to be visited instead, as a car can reach the Rest House there.

The high malarial incidence among European Officials, I consider to be, in part, due to the dilapidated state of the bungalows which, though netted, are anything but mosquito-proof. A false sense of security is given by the so-called "mosquito proof" bungalows. This matter should, I consider, be treated as urgent, owing to the enormous loss in efficiency caused among the European Officials by malaria.

(*C*) *Native Officials, including Asiatics.*

The total number of Asiatic Officials resident during the year was 11, the average number being 7.

No deaths occurred among the staff. Five cases of malaria were admitted. The general health has been satisfactory, and nothing calls for comment.

(*D*) *General European Population.*

The non-Official Europeans in the district number about 19. The cases seeking medical aid were mostly due to malaria. There are only 3 children (two under one year) and all have been more or less seriously ill. One European has been invalided home. This case was allowed to come to Uganda this year, after having been unsuccessfully operated on at home for Otitis Media early in the year. Employers of Europeans would be well advised to have their men pass a medical examination by a suitable medical man, experienced in tropical conditions, before allowing them to proceed to Uganda. One case of puerperal septicæmia occurred, and two European children were born during the year.

(*E*) *General Native Population.*

This has already been dealt with.

General Remarks.

The total number of deaths returned by the chiefs, and including those in hospital, was 8,264. No list of births is available, nor of infantile mortality, which is probably high; the number of "stillborn" is included in the Monthly Death Returns as sent from the District Commissioner's Office and gives a false figure. As this apparently has been done formerly, I have not altered it.

III. SANITATION.

The station is well kept and clean, the Administration being responsible for the grass cutting and drainage.

Malaria.—A part of the swamp in the Swahili Reserve has been drained and filled in during the year, and a larger part of the swamp south of Mbale has also been planted. Malaria, however, is still very rife and seems to be increasing.

Trypanosomiasis.—Mr. O'Connor, the European Sleeping Sickness Inspector, has done very good work in the Mpologoma area. Part of the Terinyi Mutala, as suggested, should be closed, as there are not enough sub-assistants to keep it clear. Dr. Carpenter toured the Mpologoma Sleeping Sickness area in the early part of the year.

Venereal Diseases.—Cases are demonstrated and dressers are instructed in venereal work, etc.

Sewage Disposal.—All excreta are disposed of by incinerators, which have proved satisfactory.

Water Supply.—The European supply has been very poor owing mainly to the drought, and a tank at the spring is urgently required.

Clearance of Bush and Undergrowth.—This is carred out by station labour.

Recommendations for Future Work.

Dr. Vassallo wishes it to be mentioned that he considers that a European Inspector will be very necessary, as since the present Bukedi District is to be split up and presumably the medical and sanitary staff will remain the same, it will throw a lot of heavy extra work on the shoulders of the Medical Officer.

Of the buildings recommended in 1920, the medical store is still a very urgent necessity, as the hospital has been growing tremendously, and therefore much more accommodation for equipment, drugs, etc., is required.

An English-writing clerk is, I consider, badly needed ; all the compounding and petty clerical work has to be done by the Medical Officer and Sub-Assistant Surgeon as well as the ordinary hospital duties, which involve a large number of inoculations, gland punctures for sleeping sickness cases, etc. None of the native staff has sufficient elementary education to be trusted with these duties, and if an English-writing clerk was available, who could be taught simple compounding locally, it would permit the Medical Officer and the Sub-Assistant Surgeon to pay better attention to the large numbers of important cases which are indoor and on our waiting lists, and enable the District Medical Officer to pay more attention to the needs of the district outside the station.

At the end of 1920 the number of beds in the hospital was 35. At the end of the present year the number was 114. There are now a male general ward, a female general ward, a chronic cases ward, a small surgical ward, a prisoners ward, an Asiatic ward, a chiefs ward, and 8 venereal huts. The latter want rebuilding again. The chronic cases ward was meant to take the place of the venereal huts, but was filled as soon as completed, and more room is required to cope with the numbers of venereal cases, yaws, etc., on the waiting lists.

A series of huts has been erected for the native staff. The hospital area has been enlarged, the plot next the Indian ward having been secured for the chiefs ward, which has been built up out of Lukiko funds.

District Dispensaries.—One has just been opened at Bubulo, which I visited this week. Lock-up cupboards, more vessels, etc., are required.

A dispensary will shortly be opened at Nagongera, and one is in course of construction at Pallisa.

Quarantine Camp, Mbale.—This has been rebuilt, it is situated rather too far from the Central Hospital for adequate control.

Dr. Vassallo left notes saying he would like to point out the enormous expense these temporary buildings require for their upkeep and he hopes that in the near future permanent buildings will be erected, as it is unlikely that this hospital will ever be done away with, and on account of the district being split up, Mbale will remain the centre as regards hospital accommodation.

Dr. Vassallo also desired to express his appreciation of the great assistance he has received from the Administration and Police Officials, and I personally am very grateful for the unstinting help I have received from all members of these departments since my arrival.

Dr. Vassallo also wishes to express his thanks to Mr. K. R. Kanade, Senior Sub-Assistant Surgeon, for the excellent work he has done during the two years he was with him.

R. G. GRIFFIN,

District Medical Officer, Mbale.

INDEX.

PAGE.

- Accommodation, Hospitals and Dispensaries ... 18, 37
  - Table shewing present Staff and Accommodation in each District ... 23
- Ankole—Deaths, Native, Returns of ... 10
  - Births and Deaths for last seven years, Returns of ... 11
- Anti-Malarial Measures—
  - (*a*) Major ... 32
  - (*b*) Minor ... 32
- Anthrax ... 13
- Appointments to Staff ... 6
- Asiatic Officials—Health of ... 17
  - Table showing Invalidings, Sick and Death Rates ... 17
- Beri-Beri ... 13
- Blackwater Fever, Report on—Appendix I. ... 54
- Buganda—Deaths, Native, Returns of ... 10
  - Births and Deaths for last seven years, Returns of ... 11
- Buildings required ... 37
- Buildings, repairs and additions to ... 18
- Bukedi—Plague ... 33
- Bunyoro—Deaths, Native, Returns of ... 10
  - Births and Deaths for last seven years, Returns of ... 11
- Busoga—Deaths, Native, Returns of ... 10
  - Births and Deaths for last seven years, Returns of ... 11
  - Plague ... 33
- Cerebro-Spinal Meningitis—No. of cases ... 13, 36
  - Table showing No. of cases at Entebbe, Kampala and Jinja during last six years ... 12
- Cestoda—No. of cases ... 15
- Child Birth Mortality ... 11
- Communicable Diseases ... 12
- Dental Surgeon, Report by—Appendix VI. ... 95
- Dispensaries—Branch ... 18
- Drainage—Work done ... 36
- Dysentery ... 13
- Entebbe—Plague ... 33
  - Table showing No. of Deaths from Plague during last six years ... 12
  - Table IV. ... 42
  - Water Supply ... 36
- Enteric Fever, Admissions to Hospitals, Report on—Appendix II. ... 36, 58
- Epidemic Diseases ... 13, 33
- Erysipelas ... 13
- European Officials—Health of ... 15
  - Table of Invalidings for past six years ... 16
  - Table of Sick, Invaliding and Death Rates ... 16
- Factories Board ... 32
- Financial ... 8
- Gonorrhœa ... 13
- Helminthic Diseases ... 15
- Hospitals—European, Kampala, opening of ... 18
- Housing ... 17
- Infectious Diseases ... 13, 33
- Influenza—No. of cases ... 13
- Invalidings ... 16, 17
- Jinja—Plague ... 33
  - Table showing deaths from Plague during last six years ... 12
  - Table IV. ... 46
- Kampala—Plague ... 33
  - Table IV. ... 50
  - Water Supply ... 36
- Kamuli—Plague Epidemic ... 33
- Kiagwe—Plague ... 33
- Laboratory, Report by Assistant Bacteriologist—Appendix IV. ... 89
- Labour Camps ... 37
- Lake Levels ... 18
- Lango—Plague ... 34
- Legislation ... 20, 31
- Leprosy ... 13, 36
- Lunatic Asylum ... 19
- Lymph ... 36
- Malaria—No. of cases ... 12
- Malignant Disease ... 15
- Masaka—Plague ... 33
- Maternity Centres ... 19
- Maternity Training School ... 18

PAGE.

- Mbale—District Report—Appendix VIII. 99
- Measles 14
- Medical Staff 5
  - Shortages 6
  - Inadequacy of 6
- Meteorology 18
- Mosquito-borne Diseases 12, 32
- Native Population—Births 10
  - Deaths 10
- Nematoda 15
- Plague 14, 33
  - Bukedi 33
  - Bukedi, Report on—Appendix VII. 33, 96
  - Busoga 33
  - Entebbe 33
  - Kampala 33
  - Kamuli 33
  - Kiagwe 33
  - Lango 34
  - Masaka 33
  - Preventive measures 34, 35
  - Iodine Treatment 14
    - Table showing Deaths during last six years 12
- Pneumonia 14
- Public Health—General Remarks 12
  - Vital Statistics 9
- Pyrexia of Uncertain Origin 13
- Rats in Uganda and their relation to Plague 38
- Refuse Disposal 37
- Registration of Medical Practitioners 21
- Relapsing Fever 12
- Sanitation—
  - Review of work done 31
  - Legislation 31
  - Preventive Measures 32
  - Recommendations for future work 37
- School, Maternity Training 18
- School, Medical 18
- Segregation 32
- Sewage disposal 37
- Sleeping Sickness—Admissions, Report on Administrative Measures by the S.M.O. i/c S. S.—Appendix V. 90
- Smallpox—Admissions 14
  - Table showing deaths at Entebbe, Kampala and Jinja during last six years 12
  - Treatment of, with Potassium Permanganate 35
- Spirillum Fever (*See* Relapsing Fever).
- Statistics, Vital 9, 11
- Swamps—Progress of Kampala Swamp Drainage 32
- Syphilis—Cases treated 14
- Toro—Deaths, Native Returns of 10
  - Births and Deaths for last seven years, Returns of 11
- Town Planning 32
- Trypanosomiasis 13
- Tuberculosis 15
- Typhus 15
- Vaccination 36
- Venereal Diseases Campaign 19
  - ,, Report by Specialist Officer—Appendix III. 59
- Water Supply 36
- Yaws 15